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ABSTRACT

In the wake of court decisions in the cases of "Serrano v. Priest," "San Antonio Independent School District v. Rodriguez," and "Robinson v. Cahill," Congress set aside funds as part of Public Law 93-380 for state departments of education to study the equitability of current educational funding arrangements. This document analyzes Delaware's educational finance scheme, provides an assessment of that scheme's vulnerability to court challenge, presents with extensive tabular illustration the relationship between school district wealth and educational quality in Delaware, discusses the applicability of various methods of wealth neutralization to Delaware's situation, examines the current status of property taxation and assessment in Delaware to test their suitability as bases for aid distribution formulas, investigates costs per student relative to district size and location to determine the most efficient organization of the state into school districts, and considers the state's funding program for the education of handicapped children. As a result of this study, the authors make policy recommendations in the areas of property tax reform, changes in state aid distribution formulas, and reassessment of policies for special education. (Author/PGD)

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# AN EVALUATION OF THE DELAWARE STATE PUBLIC ELEMENTARY AND SECONDARY EDUCATIONAL EQUALIZATION LAWS

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EA 012 703

Prepared for the Department of Public Instruction to fulfill requirements set forth in PL93-380.

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## Preface

The basic purpose of the project has been to analyze the issue of whether or not the Delaware state finance scheme for public elementary and secondary education provides equal opportunity for all students in the state. Funds for the research were provided by the U.S. Office of Education as a result of Section 842, Part D, Title VIII, Public Law 93-380.

The project director was Dr. Charles R. Link, Associate Professor of Economics, University of Delaware. Other investigators include Dr. David E. Black and Dr. Kenneth A. Lewis--Associate Professors of Economics, University of Delaware.

We would like to acknowledge the invaluable assistance of Edward C. Ratledge, Susan Dunwody, Priscilla Luce, and Dan Talmo.

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# AN EVALUATION OF THE DELAWARE STATE PUBLIC ELEMENTARY AND SECONDARY EDUCATIONAL EQUALIZATION LAWS

Volume I

Summary

Prepared for the Department of Public Instruction to fulfill requirements set forth in PL93-380.

## II. Summary: Legal Background for School Decisions in the United States

The constitutionality of methods of funding public secondary and elementary education in the United States has been and is being challenged in numerous states. Although the legality of Delaware's method of funding has not yet been subjected to similar tests, this report concludes that it is vulnerable on several grounds.

Three landmark cases in the area of public school finance are Serrano v. Priest (1971, 1976), San Antonio Independent School District v. Rodriguez (1973), and Robinson v. Cahill (1973). The principal thrusts of each of these cases are as follows: First, the Rodriguez decision makes it clear that with certain exceptions, future legal action against state educational finance schemes will have to be based on violations of state constitutions and not the U.S. Constitution. Second, in the Serrano case, the "equal protection" clause, which is contained in most state constitutions, was interpreted as requiring states to provide equal educational opportunity for all students. The measurement of equal educational opportunity employed was based on expenditures per student. More specifically, in order to meet the equal protection requirements in the Serrano sense and thus provide equal educational opportunity, expenditures per student across a particular state must not be related to local district taxable property wealth but rather to the wealth of the entire state. If such expenditure equality is not forthcoming,

the state funding scheme must in some way offset any expenditure differences resulting from local wealth differences. Third, Robinson v. Cahill opened up an additional avenue for legal challenge based on the "thorough and efficient" education clause of the New Jersey state constitution. This clause implies a different concept of equal educational opportunity from Serrano. In this case the basis for measuring equal opportunity is the output of the educational process as opposed to the input (expenditures per student). One interpretation of the Robinson v. Cahill type of equal opportunity could be: Do local districts adequately prepare their students to participate meaningfully in society?

It was concerns related to this new legal environment which recently prompted Congress to set aside funds as part of Public Law 93-380 for state departments of education to study the equitability of current educational funding arrangements. The results and discussion in the remainder of this report are done with these legal issues in mind.

III. Summary: Documentation of Relevant Educational Finance Data for Delaware: Do Wealth Related Differences in the Quality of Education Exist?

Volume III documents the existence or nonexistence of inter-district disparities in crucial educational variables for the fiscal years 1970-1977 in Delaware. The data are derived from information provided by the Delaware Department of Public Instruction with the most important source being the Report of Educational Statistics for the eight years. For each of the variables analyzed, dispersion is measured by the range, standard deviation and coefficient of variation. Another kind of comparison involves correlations of district property wealth with educational inputs and outputs. Those correlation coefficients, calculated for each of the eight years can be analyzed to see if trends are present in the data. One final statistic employed in examining the impact of property wealth on a particular educational variable is the regression coefficient (beta). The beta indicates the dollar change in a particular educational variable associated with an extra one hundred dollars of property wealth. Fiscal or wealth neutrality is defined as a situation where the educational variable in question is not positively related to local district property wealth.

The full value of real property increased in every district over the 1970-77 period while the variation among districts was substantial throughout the period. Evidence of this variation is apparent from the range of $39,000-$49,000 and the large coefficient of variation (see Table 3, Volume III).

Fortunately, the coefficient of variation for most educational inputs has been substantially smaller which is undoubtedly the outcome of the relatively large state role in the funding of public education in Delaware. In Volmue V of this report, the method of calculating the full value of property currently employed by DPI is called into question. In fact, it should be noted that the wealth correlations described below are even stronger when the correct measures of market value are used instead of those calculated by DPI.

Given the fact that the State of Delaware funds about 71 percent of expenditures on elementary and secondary education, we would expect relatively little interdistrict inequality in total current expenditures per student. Yet, the various measures of dispersion show that there is a substantial amount of inequality in total current expenditures per student (Tables 26-27, Volume III). The highest expenditure district spent almost twice as much per student as did the lowest expenditure district in 1977. Moreover, the simple correlation and beta coefficients reveal a strong positive relationship between wealth and current expenditures per student.

Division I expenditures per students have been the slowest growing component of state aid--an average annual rate of real growth of 0.9% (Tables 11-12, Volume III). Note that all growth rates in dollar items are in terms of real dollars which have been adjusted for inflation. (See end of Section I of Volume III for a discussion of nominal versus real values.) The dispersion

of Division I aid per student is large, and it has been increasing over time.

Of most concern, however, is the fact that the Division I expenditures per student are positively related to district property values per student. Simple correlation and beta coefficients (see Section I of Volume III for a description of beta coefficients) are positive in every year and statistically significant except for 1974 and 1975. The regression coefficient implies that approximately $100 of the $398 difference in Division I expenditures per student between high property value and low property value districts in 1977 is associated with their property value difference.

As a whole, Division I, II and III expenditures per student have risen at a real average annual rate of 1.7 percent (Tables 17-18, Volume III). The extent of dispersion among districts is fairly large and has risen somewhat over the period with the greatest interest being in the fact that Division II and III funds per student have been able to largely offset the positive and unfavorable wealth relationship of Division I expenditures. Although all of the simple correlation and beta coefficients are positive, the only statistically significant one is that for 1970. Whether the courts would look at the total package of state aid or each of its three components cannot be determined. However, as noted above, the state component of district receipts has been unable to offset the strong positive correlations between total current expenditures and property wealth.

As an indicator of district willingness to pay for education, local revenue receipts per student display considerable dispersion among districts (Tables 23-24, Volume III). The 1977 range in nominal dollars per student between the highest and the lowest district was $786 and the coefficients of variation are over 0.5 in every year. There is a high degree of positive wealth relatedness of local revenue receipts. The simple correlation and beta coefficients are quite large and highly significant. Apparently, districts blessed with relatively large property values per student are more willing and/or more able to spend for education than are less wealthy districts. To the extent that this behavior makes the quality of education a function of local district wealth, Delaware is vulnerable to Serrano-type court suits. In addition, if it can be shown that this kind of local behavior has left some students without a "general and efficient" education, litigation similar to Robinson v. Cahill is possible.

In Serrano v. Priest the plaintiffs argued that low property wealth districts need much higher property tax rates to generate equal educational expenditure dollars compared to higher property wealth districts. Thus the quality of education in California was seen to be a function of the value of taxable property in the district. The highest tax rate in Delaware, by 1977 was over five times as large as the lowest rate, and the coefficient of variation had risen from .33 to .42. There is, on the positive side, no apparent relationship between tax

rates and district wealth as evidenced by the statistical insignificance of all the simple correlation and beta coefficients. It appears that rich districts do not put forth greater tax effort, (i.e., impose higher tax rates) than less wealthy districts. The greater amount of local revenue raised by wealthier districts, shown previously, is due mainly to their greater fiscal capacity.

Class size has dropped on average from 23.89 in 1970 to 21.52 in 1977 (Table 4, Volume III). However, the drop has not been evenly distributed among school districts as evidenced by the substantial year to year differences in measures of the degree of dispersion among districts. The dispersion measures indicate that there has been some narrowing of differences in class size between school districts since 1974.

From a policy perspective, an important result is the negative and highly significant (except for 1976) correlations between class size and district real property per student. Such inequalities associated with wealth differences are probably illegal in the context of a Serrano-type court decision. One favorable sign though is the slight decline in the degree of negative correlation after 1974. Whether this is a trend or merely a temporary aberration cannot be determined until further data are accumulated.

Among the most crucial variables analyzed in Volume III, there was substantial interdistrict dispersion observed. In addition, total current expenditures per student, regular

student enrollment per regular full-time teachers, Division I receipts/student, and local revenue receipts per student, are strongly correlated with local property wealth. As was pointed out in the discussion of the current legal situation in school finance, the existence of such disparities has proven fatal to school finance schemes in several states. The policy prescriptions are discussed in Volume VIII of this report.

## IV. Summary: Wealth Neutrality and the Demand for Education

Due to a series of recent court decisions, systems of public elementary and secondary school finance are currently under legal challenge in many states. As a result, substantial changes are inevitable in the way many state and local governments finance education. Some states have already instituted major changes in their educational finance systems, while many others are seriously considering changes. Unfortunately, policy makers have been severely handicapped. On one hand there is a lack of clear operational signals from the courts regarding legal requirements, and on the other hand there is a lack of empirical analysis of the impact of alternative school finance methods on the distribution of tax burden and on the behavior of the school system itself.

Volume IV of the Final Report contains two technical papers which investigate some of the problems inherent in designing a state finance plan which is "wealth neutral," (i.e., public school expenditures do not reflect differences in local school-district wealth). Under such a plan, state aid to individual local districts would be designed to offset any inherent tendency for wealthier districts to spend more per pupil than poorer districts. It would not be uncommon under such a plan to have poorer districts receive much more state aid per pupil than richer districts. It is important to note that under a wealth neutral plan, expenditures per pupil may differ across districts, but these variations cannot be related to local school-district wealth.

Martin Feldstein, Professor of Economics at Harvard University and President of the National Bureau of Economic Research, has argued, along with several others, that states should introduce matching-rate schemes to achieve a wealth-neutral finance plan. Under a matching-rate plan, the amount of state aid received by a particular district depends on how much the district spends per pupil. In effect, for every dollar of local school-district expenditure the state will provide matching funds of some fraction of a dollar. Feldstein proposes that the matching-rate for each district be chosen so that the resultant expenditure patterns of the district be unrelated to differences in local wealth.

Some states have adopted matching-rate finance plans, including Massachusetts and Pennsylvania on the East Coast. In fact, "district power equalizing," (DPE) an approach that has been advocated as a method of achieving complete wealth neutrality, is essentially a matching-rate scheme and has been adopted in one form or another in such states as Michigan, Kansas, and Illinois. Under DPE, any two districts that levy the same tax rate on local wealth have the same level of educational spending per pupil, so that each district has in a sense the same tax-base per pupil. In Delaware's present finance plans, the Division III funds are set up on a matching-grant basis. The level of funding of this program is so low, however, that all districts receive their maximum allotment. As a result, the Division III funds can be treated conceptually

as block grants.

Feldstein has also pointed out, that a state must be very careful in designing its matching-rate plan if wealth neutrality is the objective. He argues, for example, that based on empirical evidence, Massachusetts' plan, while moving in the right direction, has not achieved complete wealth neutrality. He also notes that DPE in general is too rigid and cannot be expected to achieve complete wealth neutrality; in fact, DPE may likely be wealth reinforcing.

In designing a wealth-neutral, matching rate scheme or in anticipating whether DPE would achieve complete wealth neutrality, two types of information must be sought. First, one needs estimates of how school-district expenditure patterns would respond to different levels of incremental state-funding per dollar of additional district expenditure. That is, what happens to district expenditures when the state changes the price to districts of spending an additional dollar? Second, one needs a computerized model to simulate the effects of variations in total state matching funds, legislated minima and maxima on state aid for particular districts, etc. The technical papers in Volume IV concern themselves with the first type of information, namely the estimates of school district behavioral responses. As might be expected, these papers uncover many problems involved in arriving at such estimates and thus in designing a wealth-neutral, matching-rate financing plan.

However, as a result of the work, we have reached several

conclusions. Contrary to Feldstein's findings for Massachusetts, if Delaware were to adopt a matching-rate financing plan, a DPE plan could theoretically come very close to providing complete wealth neutrality. Before one could make such a policy recommendation, however, it would be necessary to simulate the effects of such a plan. This is particularly necessary for Delaware for several reasons, including the apparent differences in the response of different types of districts to incremental state aid and the fairly small estimated response of all Delaware districts to changes in matching-aid rates as compared with those estimated for districts in other states. Because of these findings, we hypothesize that any matching-rate plan, including DPE, would most likely be subject to fairly severe restrictions, including legislated maxima and minima, which could strongly affect and possibly distort the wealth-neutralizing aspects of the plan.

A second major conclusion is that given the problems of designing, implementing, and overseeing a wealth neutralizing matching scheme, the Delaware system of large block grants is an attractive alternative. The system is relatively simple to administer, and based on 1970-1977 data, the Delaware plan has produced a degree of wealth neutrality which is only slightly worse than that as reported by Feldstein for the Massachusetts' matching-aid plan. Moreover, comparisons in wealth neutrality were made between Delaware and several states which have recently adopted DPE schemes: Illinois, Kansas and Michigan. The results

suggest that Delaware's wealth neutrality is only slightly less favorable than that which exists in Illinois or Michigan but about the same as that which exists in Kansas.

We would recommend along these lines that policy makers investigating the present Delaware plan work within its general framework to reduce the wealth relatedness of expenditures. One task is to rationalize the high correlation of Division I expenditures with district wealth, as shown in the discussion of historical data in Volume III of our report. An alternative option is to consider reevaluation of the role of Division III funding in the overall finance plan.

## V. Summary: The Property Tax: Is it Equitable?

In this portion of the report, we examine the property tax as it is currently administered in Delaware. In particular, we shall be interested in documenting the equity and/or inequity of the property tax in its role 1) as a source of funding the local share of school expenditures and 2) as an integral part of the state funding of schools in Delaware inasmuch as market values of property, as derived from county assessments, form an important component in the Division III formula. In the discussion which follows data are presented which allow examination of the issues of inter and intra district inequities in assessment-sales ratios. These ratios are used to compare district property wealth under the current system to that which would exist if "actual" property values were in effect. The analysis shows that in Delaware the differences between currently used property values (i.e., those used by DPI in calculating Division III entitlements) and actual property values among districts are substantial. Thus, since the state does not base its Division III allocation on "equalized" property values, the property tax may be susceptible to legal challenge.

The policy implications of these results are discussed in detail in Volume VIII. Our main policy proposal is that at a minimum, the state should institute a tax equalization board that would have as its main goal the equalization of assessment-sales ratios between districts. A more appropriate method,

although potentially less politically feasible, of obtaining uniformity in assessment procedures would be to have the state take over the business of property assessments. The latter approach would not only provide for equalizing assessments between districts but also would eliminate the widespread intradistrict variations in assessment-sales ratios observed in the state. The state tax equalization board is not capable of correcting intra district inequities in assessments.

## VI. Summary: Efficiency in Size of Delaware School Districts

In this section of the report we investigate to what extent school districts in the State of Delaware are of efficient size. Larger school districts may attain economies by spreading administration, equipment and volume purchasing over more students. Diseconomies may accrue, however, due to increasing costs resulting from transportation, bureaucracy and material storage and distribution within a large district. The optimal size of a school district is the enrollment level at which cost per pupil reaches a minimum.

In 1967 school districts in Delaware were reorganized resulting in substantial consolidation. Twenty-three school districts were formed with the average district size being 5471 pupils in 1976. There is considerable variation around this average, however, with districts in the state ranging in size from 738 to 16,923 pupils in 1976.

We investigate the question of scale economies for school districts in Delaware by estimating a quadratic (i.e., U-shaped) relationship between average cost and enrollment for the State's 23 districts in seven school years from 1969-1976. Several variables which reflect differences in educational input and output quality are included in the cost relationship.

The results indicate that a U-shaped relationship exists between cost per pupil and the number of pupils in the districts. The relationship is highly significant for urban districts and

not statistically significant for rural districts. The enrollment levels which produce the lowest cost per pupil are calculated at 11,209 pupils and 7910 pupils for urban and rural districts respectively.

A sensitivity analysis indicates that cost per pupil does not vary greatly within the size range of presently constituted urban districts (i.e., from approximately 3000 to 17,000 pupils in 1976). Although per pupil savings is small, the total savings for all districts, however, can be significant. For example, a $25 savings per pupil, which is implied if the average urban district size of 7185 pupils in 1976 were to change to the optimal size of 11,209, translates into more than $1.6 million for the 65,000 students residing in the 11 urban districts. If, however, the estimated parabola is extrapolated far beyond the existing district size range, costs per pupil are found to escalate.

In conclusion there seems to be some evidence that would support a slight consolidation or urban school districts in Delaware in order to achieve size efficiencies. For rural districts there is little support for any consolidation. Although it is difficult to extrapolate too far out of the range of observations in the 23 districts (i.e., before the desegregation in New Castle County), there are no grounds, from an efficiency point of view, for consolidation of the New Castle County districts as was done in the recent desegregation case.

## VII. Summary: Equal Opportunity in Special Education

With the passage of PL 94-142, federal legislation for handicapped children, and Delaware's recently passed legislation, SB 353, which complies with federal law mandating "free appropriate education" for all handicapped children 4 through 20, more service options will be available to meet the needs of the handicapped child.

Two major provisions of SB 353 include the following: (1) it legally provides for autistic children, and (2) it also provides for financial aid, including full tuition funds and transportation costs for private placement of "complex or rare" handicapped persons. The new law no longer provides for partial tuition and transportation reimbursement (based on average per pupil expenditure) for private placement of learning disabled children. Learning disabled children who are considered to have rare and complex handicaps are eligible for full state tuition.

The following current procedures are recommended for further reassessment:

1. Private placement funding for those students classified as rare and complex. Residential treatment centers located outside the State of Delaware range anywhere between $5,000 to $38,000 per year. A study of the advantages and disadvantages of out-of-state placements should be considered. A study of the advantages and disadvantages of establishing group homes within the State for those students classified as "complex or rare" is further recommended.

2. The relatively large differences in expenditures per student for severely and trainable mentally handicapped. Comparison among the three schools for the severely and trainable mentally handicapped indicates substantial differences in expenditures per student. In 1977, the expenditures at Meadowwood, Ennis, and Charlton were $5,449, $3,605, and $3,580 respectively.[1] Are students in each of these schools receiving the same quality of education? It is recommended that the state make an attempt to equalize expenditures for similar categories of the handicapped.

The Department of Public Instruction has made significant progress in the coordination of personnel effort, programs and services across districts within the state. According to a recent evaluation by the Bureau of Education for the Handicapped, Delaware is currently in substantial compliance with PL 94-142.

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[1]Department of Public Instruction, Report of Educational Statistics, 1976-1977.

## VIII. Summary: Policy Recommendations

Volume VIII includes a discussion of our policy recommendations. These are listed below and a more detailed discussion can be found in Volume VIII.

### Property Tax Reform

As our policy recommendation, we propose that at a minimum a state tax equalization board be formed. Whether the minimum policy is sufficient depends on one's feeling about the probability of a taxpayer suit, especially in New Castle County as a result of the merging of school districts associated with desegregation. The tax equalization board is incapable of eliminating the huge intra district differences in assessment-sales ratios in New Castle County. A state takeover, however, by enforcing uniform assessment and reassessment procedures could eliminate existing intra district inequities. If taxpayer suits are viewed as being unlikely, then the state tax equalization board is capable of adjusting inter district differences so that a more equitable distribution of state funds can be obtained.

### Revision of the Divisions I and III Distributions

The second part of our basic policy recommendation is to substantially increase the level of Division III funding, to

be offset by a substantial decrease in the level of Division I funding. Of the Division I plus III pool, Division I's share is currently in the neighborhood of 95%. We recommend that Division I's share be decreased to roughly 60% over a period of five to six years. The first step in this direction would be to assign all Division I increments over the next five years into the Division III pool. Since we cannot predict how district expenditures per pupil would react to such a funding reallocation, it would be necessary to carefully monitor the progress toward equalization from both an input and an output standard. Under the proposed 60-40 split, funds would be distributed from districts like Alexis I. duPont, Mount Pleasant, Capital, Indian River, and Cape Henlopen to districts like De La Warr, New Castle-Gunning Bedford, Caesar Rodney, Lake Forest, Conrad, and Newark. In general, the net gainers under the proposed redistribution tend to be the poorer districts in the State in terms of their property wealth per pupil.

Special Education

The following current procedures are recommended for further reassessment:

1. Private placement funding for those students classified as rare and complex. Residential treatment centers located outside the State of Delaware range anywhere between $5,000 and $38,000 per year. A study of the advantages and disadvantages of out-of-state placements should be considered. A study of the advantages and disadvantages of establishing group homes within the State for those students classified as "complex or rare" is further recommended.

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[1]Department of Public Instruction, Report of Educational Statistic, 1976-1977.

# AN EVALUATION OF THE DELAWARE STATE PUBLIC ELEMENTARY AND SECONDARY EDUCATIONAL EQUALIZATION LAWS

Volume II

Legal Background for School Decisions in the United States

Prepared for the Department of Public Instruction to fulfill requirements set forth in PL93-380.

The constitutionality of methods of funding public secondary and elementary education in the United States has been and is being challenged in numerous states. Although the legality of Delaware's method of funding has not yet been subjected to similar tests, this report concludes that it is vulnerable on several grounds. The first section below summarizes several landmark court cases in the area of school finance. (More detailed analyses of some of these cases is contained in the Appendix A.) This section is followed by a description of three different concepts of equal opportunity which are relevant to an evaluation of the legal status of an educational finance system. Finally, the discussion turns to the current legal status of Delaware's method of funding public secondary and elementary education.

## I. Landmark Cases

Three landmark cases in the area of public school finance are Serrano v. Priest (1971, 1976), San Antonio Independent School District v. Rodriguez (1973), and Robinson v. Cahill (1973). The principal thrusts of each of these cases are as follows: First, the Rodriguez decision makes it clear that with certain exceptions, future legal action against state educational finance schemes will have to be based on violations of state constitutions and not the U.S. Constitution.[1] Second, in

the Serrano case, the "equal protection" clause, which is contained in most state constitutions, was interpreted as requiring states to provide equal educational opportunity for all students. The measurement of equal educational opportunity employed was based on expenditures per student. More specifically, in order to meet the equal protection requirements in the Serrano sense and thus provide equal educational opportunity, expenditures per student across a particular state must not be related to local district taxable property wealth but rather to the wealth of the entire state.[2] If such expenditure equality is not forthcoming, the state funding scheme must in some way offset any expenditure differences resulting from local wealth differences. Third, Robinson v. Cahill opened up an additional avenue for legal challenge based on the "thorough and efficient" education clause of the New Jersey state consitution. This clause implies a different concept of equal educational opportunity from Serrano. In this case the basis for measuring equal opportunity is the output of the educational process as opposed to the input (expenditures per student). One interpretation of the Robinson-Cahill type of equal opportunity could be: Do local districts adequately prepare their students to participate meaningfully in society?

It was concerns related to this new legal environment which recently prompted Congress to set aside funds as part of Public Law 93-380 for state departments of education to study the equitability of current educational funding arrangements.

## II. Three Concepts of Equality of Opportunity

Relevant and coherent analysis of state education plans requires an understanding of three different legal concepts of equal opportunity as it applies to the provisions of educational services. These legal issues indicate the approaches which have been successfully employed to overturn state school finance schemes and those which may be employed in future cases. Based on her survey of the legal issues, Betsy Levin identifies three definitions of equality of opportunity which have evolved in the courts: input standards, output standards, and taxpayer equity.[3]

Input standards fall into three categories. First, in order to provide equal opportunity in California, the trial and state Supreme Courts have ruled that there must not be significant disparities in expenditures among school districts. In addition, these disparities may not be related to differences in district wealth. However, the court qualified this by indicating that what is needed is not equal expenditures for each student but only that "all school districts possess equal ability in terms of revenue to provide students with substantially equal opportunities for learning."[4]

The court challenges in the area of school finance have become more complex as the comprehensiveness of the concept of fiscal neutrality has expanded to include not only the Serrano type approach, which works through equal protection clauses of state constitutions, (i.e., school quality may not

be related to district wealth) but also to attack input differentials of school districts on the basis of "general and efficient," "thorough and efficient," "ample provision," etc. clauses in state constitutions. For instance, a state court in Washington, in recently overturning the Washington school finance law, argued that the state was failing to meet its duty to provide "ample provision for education." Such an approach was taken in a Seattle, Washington case, where the court was interested in guaranteeing that a minimum level of expenditures was forthcoming to provide a basic education without relying on any excess levies.[5]

Another approach, also used in Seattle, took differential costs to be crucial. For instance, the costs of providing a quality education in a central city will be higher than in rural areas because of higher salary costs, land costs, etc., in these areas. Thus, equality of opportunity would require higher expenditures per pupil in high-cost areas as opposed to low-cost areas. In addition, in a New York case the four largest districts in the state, have argued, among other things (e.g., those noted above), that they are subject to municipal overburden. The last term refers to a situation where there are noneducational services supported out of the property tax which place extra pressures on the school district taxpayers. These services, it is argued, place a constraint on the amount of taxes that can be raised by the large city school district.[6]

Output standards of two different types were used in the Robinson v. Cahill decision. One relates to the attainment of equal minimal student achievement. By not allowing this particular output standard to be met, the court found that the state was not meeting its charge of providing a "thorough and efficient" education. The court suggested that all students in New Jersey schools should receive an education which provided them with the basic skills necessary for citizenship as well as to compete in the labor market.

The second output standard used in Robinson v. Cahill involves needs differentials. The court held that school districts must, irrespective of their financial capability, provide for all students with special needs (e.g., compensatory education, etc.). However, Levin points out that the court in Robinson v. Cahill never really clarified the issue as to whether compensatory education is required or only permitted.[7]

Taxpayer equity is a third definition of equal opportunity. While the input and output measures discussed above deal with students, the court in Serrano was also concerned with fairness to taxpayers. The court suggested that it is necessary to equalize tax burdens as well as expenditures. More precisely, "'taxpayer equity' is defined as freeing the tie between 'capacity'--the districts' per pupil property values--and 'effort'--the districts' tax rate."[8]

In view of the foregoing discussion it is clear that legal attacks on school finance structures can be based on several different concepts of equal opportunity. Thus, one objective of this

study has been to investigate, where possible, various statistical summary measures of these concepts of equal opportunity for Delaware in order to determine the extent to which Delaware is currently meeting criteria established by the courts.

Finally, it is important to note that given these three basic and complex possible definitions of equality of opportunity, policy makers are placed in a difficult position. A plan for reform may meet one criteria of equality of opportunity but not another. It is thus incumbent on researchers in school finance to provide policy makers with the required information about a current and/or proposed plan's ability to meet each of the criteria discussed above.

## III. Delaware's Current Status in Relation to Court Standards

As mentioned above, it is clear that any school finance scheme can be subject to attack by a number of different legal strategies. Betsy Levin (1977) divides the basic strategies into negative and positive approaches. An example of a negative approach would be to argue that educational opportunity is related to local school district wealth, fiscal capacity, or voter whims. On the other hand, using a positive approach, one might argue that a state is responsible for seeing that a "thorough and efficient" education, or its equivalent, is provided to all students in the state.

Given the current legal situation, Delaware's educational finance system appears to have several potential weaknesses. One of the most obvious is its dependence on a property tax with non-

uniform local assessment practices and without a state equalization system. Thus, the distribution of Division III state school funds depends on local assessment practices. Such finance schemes are ripe for legal challenge. Moreover, even if Delaware did equalize its property tax, the aid distribution formula would have to properly account for important differences in local fiscal capacity. Whether any districts in Delaware are faced with municipal overburden can only be determined after the fiscal effects of the new school district in New Castle County are known.

Delaware also shares another weakness common to all states having property taxes which are totally controlled by local governments, and that is that locally voted revenues are subject to the whims of local voters. When it can be shown that these voter whims are the cause of inequality of educational opportunity, the state is responsible for making appropriate compensating adjustments in its aid formula.

Finally, Delaware, like New Jersey, has the equivalent of a "thorough and efficient" education clause in its constitution. Delaware's constitution calls for a "general and efficient" education for all (Article 10, Section 1). This is further stated in Title 14, Chapter 1, Section 122A of the Delaware Code where it states:

> "The Board shall adopt rules and regulations, consistent with the laws of this State for the maintenance, administration, and supervision throughout the State of a general and efficient system of free public schools in accordance with the provisions of this title ...."

FOOTNOTES

[1]However, possibilities of future federal action should not be dismissed where (a) educational opportunity in the absolute sense is not being provided, (b) education insufficient to allow people to avail themselves of First Amendment rights is the case, (c) race discrimination with intent can be shown, and (d) suspect classifications associated with school districts can be ascertained.

[2]Courts in Idaho, Oregon and Washington, although they found substantial disparities in expenditures across districts, said that the system of finance was legal. See Olsen v. Oregon (1976); Thompson v. Engelking (1975); Northshore v. Kinnear (1974).

[3]The discussion of legal issues draws heavily on the work of Betsy Levin (1977).

[4]Ibid., p. 10. A court in Connecticut ruled along similar lines to those of Serrano. (Horton v. Meskill, 31 Conn. Sup. 377, 332 A.2d 113(1974); Conn. , A.2d (April 19, 1977).

[5]Levin, p. 11.

[6]No. 8208/74 (Nassau County Sup. Court, N.Y., filed 1974).

[7]Levin, p. 12. Also see Educational Finance Center, Education Commission of the States (1978) for an extended discussion of the more recent cases in school finance reform.

[8]Levin, p. 12.

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## Appendix II-A

## Analysis of Landmark Court Cases[1]

### Serrano v. Priest

California's path-breaking Serrano v. Priest case, originally decided in 1971, paved the way for approximately fifty suits filed in state and Federal courts.[2] In most of the cases the plaintiffs argued that, as residents of property-poor, low tax revenue, low expenditure school districts, their constitutional right to equal protection under the law had been violated. Despite the absence of an explicit Federal mandate in education, the California Supreme Court decided that the plaintiffs, who argued for an elimination of wealth-derived differences in available funds for education, had been denied equal protection.

Equal protection clauses indicate the classifications of individuals by governmental agencies and legislators for purposes of differential treatment under the law. When the Fourteenth Amendment to the U.S. Constitution asserts, "No state shall . . . deny to any person within its jurisdiction the equal protection of the law," it does not require that every person be treated exactly in the same manner. They may be classified differently (rich/poor, married/single, etc.) provided the classification is relevant to a "valid purpose" of a given constitutionally permissable rule, law, or program.[3]

When an equal protection question arises the court examines two aspects of the question: 1) the purpose of the rule and 2) the classification. When the classification is determined to be a fundamental interest (i.e., a constitutionally guaranteed individual liberty), the court will employ "strict scrutiny" in its analysis of the question. In such a situation the state must, in justifying such a law or rule, show a compelling state interest. If a fundamental interest is not at stake the court will use a less stringent "rational basis" test in its examination. Under this last criteria the classification must bear a "reasonable" or "rational" relationship to legitimate state objectives.

The "rational basis" test is most often employed in examinations of general economic or social legislation. The classifications most often termed "suspect" and worthy of "strict scrutiny" are those based on such classifications as race, nationality, sex, etc. Today these classifications are generally presumed invalid because they're almost always irrelevant to a valid purpose of a permissible rule or program.

The plaintiffs in Serrano v. Priest argued that education should also be treated as a "fundamental" interest and wealth as a suspect classification. California's education system draws its funds from local, state, and Federal sources. Local revenue was collected through the taxation of property in the district, and state aid to local districts was allocated under a flat grant-foundation program. Despite the state's avowed intention to equal-

ize the amount of money available to each district through the foundation program, large inter-district disparities remained. As long as local property taxes account for a significant percentage of available funds these disparities are likely to remain. In 1968-69, local property taxes contributed 55.7% of California's educational revenue; state aid, 35.5%; Federal and miscellaneous sources, 8.8%.[4]

On appeal of two lower state court dismissals of the case, the California Supreme Court ruled for the plaintiff, stating that California's educational finance system:

> . . . with substantial dependence on local property taxes and resultant wide disparities in school revenue, violates the equal protection clause of the 14th Amendment.

The court recognized that:

> the right to an education in public schools is a fundamental interest which can't be conditioned on wealth . . . .[5]

It could discern no "compelling state purpose" necessitating the present setup. Therefore, it reasoned, the system as structured could not withstand a rigorous constitutional challenge and was therefore unconstitutional under both the California and United States Constitutions.

The significance of the court's decision rested with its recognition of education as a fundamental interest. In earlier cases based on matters of relative deprivation, the U.S. Supreme Court had implied that even the existence of "invidious classifications on the basis of wealth" was insufficient to trigger the

compelling, fundamental interest standard of the equal protection analysis.[6] Why did the California Supreme Court go against precedent?

The court used three lines of reasoning in its determination of education being a fundamental interest. They first argued for the importance of education. In their opinion, the majority stated that education:

> . . . is a major determinant of an individual's chances for economic and social success in a competitive society. It has a unique influence on a child's development as a citizen and on his participation in political and community life.[7]

Secondly, the court compared education to previously recognized fundamental rights such as the rights of criminal defendants and the right to vote. Since education enables one to exercise these basic rights, it is, by analogy, just as important to the individual as these rights. Finally, the court compared education to other government services. It offered five points which it felt distinguished education from other government services and therefore made it unique and fundamental in that:

1. Education is necessary to preserve the individual's opportunities to compete successfully in the economic marketplace.
2. It is "universally relevant" in that everyone benefits from it.
3. It has a "sustained, intensive" contact and influence on youth.
4. It molds personality like no other service.
5. It is compulsory.

In its recommendations to state legislators, charged with reform of existing law, the court urged that the "economic burden of public education cannot be a function of wealth other than the wealth of the state as a whole." The court's intent was not to equalize expenditures statewide. Based on its constitutional analysis it found that differences in educational opportunities (i.e., local and state tax revenue earmarked for education) derived from differences in inter-district wealth violated the constitutional right to equal opportunity of individuals in the less wealthy districts.

In an attempt to meet the mandate of the court, the California legislature in 1972 passed an educational finance reform act. In brief, it increased foundation levels and put a ceiling on allowable local tax rates (rates could not go above the ceiling unless a "voted override" was approved by district taxpayers). The ultimate goal of the act was to bring about a "convergence" of expenditure between rich and poor districts in California.

Reform advocates felt the reform bill didn't go far enough. The Serrano case reentered the courts in 1974. By this time the Rodriguez decision (to be discussed below) had been handed down by the U.S. Supreme Court. It effectively cut off the Federal courts and the Federal statutes as a stimulus for educational finance reform. Plaintiffs instead turned to equal rights provisions in the California State constitution. Again in late 1976, the California Supreme Court determined the state financing scheme was still unconstitutional:

> .... we have concluded that the state public school financing system here under review, because it establishes and perpetuates a classification based upon district wealth which affects the fundamental interest

> of education, must be subjected to strict judicial scrutiny in determining whether it complies with our state equal protection provision. Under this standard the presumption of constitutionality normally attaching to state legislative classifications falls away, and the state must shoulder the burden of establishing that the classification in question is necessary to achieve a compelling state interest. Basing our determination upon the amply supported factual findings of the trial court . . . we conclude without hesitation that the trial court properly determined that the state failed to bear this burden.[8]

Robinson v. Cahill

This case was decided in New Jersey where a group of students, parents, taxpayers and public officials from property-poor districts filed a suit against state officials in 1970.[9] The plaintiffs charged that: 1) the equal protection clauses of the U.S. and New Jersey Constitutions prohibited the state:

> . . . from discriminating in favor of children attending public schools in wealthy school districts by distributing the state's educational resources in proportion to the wealth of the respective school districts.[10]

2) On a matter not brought out in Serrano, plaintiffs in Robinson v. Cahill argued that the New Jersey constitution's "thorough and efficient" education clause (Delaware has a General and Efficient Clause in its constitutional educational provisions) required that the state provide each child:

> . . . at least such instruction as is necessary to fit it for ordinary duties of citizenship . . . [and] . . . to provide a minimum education to all children . . . so that they may be able to read, write and function in a political environment.[11]

According to the plaintiffs, since the above conditions did not hold, it was contended that the equal protection clause of the U.S. Constitution and the education clause of the New Jersey Constitution were violated.

In New Jersey local revenues accounted for 67% of all funds for education in 1972 with wide disparities in inter-district revenues being the rule.[12]

The trial court found the New Jersey system unconstitutional, primarily under state and Federal equal protection clauses. It accepted evidence of large fiscal disparities among school districts, a direct relationship between property values and expenditures/pupil and an inverse relationship between expenditures and local tax rates. Based on these findings the court concluded that differential resource and spending levels adversely affected the quality of education provided by New Jersey's poor districts.

The case was appealed to the New Jersey Supreme Court after the Rodriguez decision. Because of Rodriguez, the State Supreme Court reversed the trial court ruling on Federal equal protection grounds. It did, however, invalidate the New Jersey school finance system on the grounds of the state education "thorough and efficient" clause. The court construed the clause as requiring the state to provide all children with an equal opportunity to attain a thorough and efficient education. The New Jersey public school system failed to provide all children in the state with this opportunity and was therefore deemed unconstitutional.

In its opinion, the court provided some insight into the meaning and interpretation of the "thorough and efficient" mandate. An 1875 New Jersey constitutional amendment imposed on the State the ultimate responsibility to provide a free education for all eligible children. The New Jersey Supreme Court suggested several guidelines for assessment of the "thorough and efficient" language:[13]

1. The meaning is relative and changes over time.

2. The standard should be measured against the demand of the post-school world. That is, the student should be made "fit for the ordinary duties of citizenship as well as being prepared to compete in the labor market." (In the trial court, "thorough" was defined literally as complete and with attention to detail while "efficiency" refers to the effectiveness with which available resources are applied to achieve a certain end result.) The New Jersey Supreme Court, however, took a less stringent interpretation when it fell back on an earlier case when it stated "Nor do we say that if the state assumes the cost of providing the constitutionally mandated education, it may not authorize local government to go further . . ."[14]

3. Before any child in the state could obtain an education better than "thorough," all children in the state must be getting at least a "thorough" education.

The main difficulty with the above approach will obviously involve defining what is meant by a thorough and efficient education.

San Antonio Independent School District v. Rodriguez

The U.S. Supreme Court handed down a most significant decision on March 21, 1973 when it refused to find, in this case, that the Texas school finance system was in violation of the Federal equal protection provisions of the U.S. Constitution.[15] Is wealth a suspect classification and is education a fundamental interest under

the U.S. Constitution? The Federal district court had answered both questions in the affirmative. But the Supreme Court, in a divided 5-4 decision, overturned the lower court decision.

Earlier, in the Serrano case, the state court said:

> We have determined that [the California] funding scheme invidiously discriminates against the poor because it makes the quality of a child's education a function of the wealth of his parents and neighbors.

The Supreme Court did not accept this reasoning. It was not convinced that available evidence proved that all poor are concentrated in poor districts or that relative deprivation (a little money vs. a lot of money) is the same, constitutionally, as absolute deprivation (no money). At least where wealth is involved, the court stated that equal protection language does not require absolute equality or precisely equal advantages. The court found it difficult to define a "poor" classification in its ruling and found it impossible to establish such a classification as "suspect."

Further, the court stated that the key to ascertaining whether education is "fundamental" is to assess whether a right to education is explicitly or implicitly guaranteed by the Constitution. It is not explicitly guaranteed.[16] Since the interest was not "fundamental" and the classification not "suspect" the Texas finance system was subjected only to the rational-basis test. Since the court decided that the system did have some rational relationship to a legitimate state purpose (i.e., the education system's responsiveness to the state's interest in promoting local control), it withstood the rational test and was found constitutional under the Federal language.

Footnotes

[1]337 F. Supp. 280 (1971), rev'd, U.S., 36 L. Ed. 2d 16 (1973). For a more detailed discussion of the cases discussed below see (1), (8), (10), (11).

[2]96 Cal. Rptr. 601, 487 P. 2d 1241 (1971).

[3]See (6, pp. 118-120).

[4]See (9, p. 5).

[5]See (7).

[6]James v. Valtierra (402 U.S. 137).

[7]See (7, p. 514).

[8]Serrano v. Priest, 18 Cal. 3d , 557 P. 2d 929, 135 Cal. Rptr. 345 (1976). A similar decision was obtained in April 1977 by the Connecticut Supreme Court. That is, it ruled that school expenditures per pupil were related to local wealth and that wealth was both a suspect classification and a fundamental interest under the state constitution. (Horton v. Meskill).

[9]Robinson v. Cahill, 118 N.J. Super. 223, 287 A.2d 187 (1972); aff'd, 303 A.2d 273 (1973).

[10]See (10, p. 17).

[11]See (10, p. 17).

[12]See (10, p. 17).

[13]See (10, p. 25).

[14]62 N.J. at 520, 303 A, 2d at 298.

[15]See footnote 1.

[16]See the article in (11) by David Long, "The Property Tax and the Courts: School Finance After Rodriguez," for an excellent discussion of the dissenting opinions.

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12. San Antonio Independent School District, et.al. v. Rodriguez, et.al. 411 U.S. Reports 1.

13. Photo copy of Serrano v. Priest, Cal. Supr. Ct. No. 938254.

# AN EVALUATION OF THE DELAWARE STATE PUBLIC ELEMENTARY AND SECONDARY EDUCATIONAL EQUALIZATION LAWS

## Volume III

Documentation of Relevant Educational Finance Data for Delaware: Do Wealth Related Differences in the Quality of Education Exist?

Prepared for the Department of Public Instruction to fulfill requirements set forth in PL93-380.

In this portion of the report, data which provide general information about the characteristics of the educational finance system in Delaware are presented and examined. The data cover several educational finance variables for the 23 regular school districts during the fiscal years 1970-1977. An analysis of the data yields insights into whether or not 1) differences in the quality of education exist which are a function of district wealth and 2) the educational system is providing a "general and efficient" education to all students in the State. The data tables (Section III) are preceeded by an explanation of the descriptive statistics employed in the tables (Section I) and by a discussion of individual tables (Section II). For each educational variable, comparisons are made 1) among districts for any given year, 2) statewide summary statistics over time and 3) of the nature and extent of its relationship to district property wealth where relevant.

## I. Description of Tables and the Statistics Employed

The top part of each data table contains raw annual data for each district, and the bottom part contains appropriate annual statewide summary statistics. One objective of the

statistics is to measure the degree of dispersion among districts. For any given educational variable the particular measures of dispersion are the following:

Range - Maximum value minus minimum value.

Ratio - Ratio of maximum value to minimum value.

Standard deviation - A statistic which measures the closeness of the district values to the state average. Smaller values indicate less dispersion. See appendix for precise definition.

Coefficient of variation - The standard deviation divided by the mean. It is a measure of relative dispersion which permits comparisons with other educational variables which are in different units, (i.e., dollars per student vs. enrollment per teacher). Compared to the standard deviation it is a better measure of changes in dispersion over time for a given variable. Smaller values indicate less dispersion. See the appendix for a precise definition.

The second objective of the summary statistics is to measure the degree of wealth relatedness of certain educational finance variables. The two statistical measures are:

Simple correlation coefficient - A statistic which measures the closeness of association between two variables. One of the variables is always property wealth per pupil; the other is the variable being described in the specific table. The value of a correlation coefficient ranges from -1 to +1. A positive (negative) value indicates that the two variables are positively (negatively) associated. The closer the correlation coefficient is to -1 or +1 the stronger is the association between property wealth per pupil and the variable in question. In parentheses below each correlation coefficient is its significance level which shows the degree of confidence we can have that the observed correlation coefficient equals the true correlation coefficient. For instance, a significance level of .05 would indicate that we can be 95% sure that the measured correlation coefficient equals the true correlation coefficient. See the appendix for a precise definition and further explanation.

beta coefficient - A statistic which measures the impact of a $100 change in property wealth per student on the educational variable in question. The beta coefficients are obtained from a bivariate regression where the dependent variable is a school district fiscal variable and the independent variable is wealth per student (both in per student terms). For instance, a beta value of 0.200 would indicate that for each $100 difference in property wealth per pupil the variable in question changes by $0.20. The degree of statistical confidence in the measured beta coefficient can be inferred from the standard error printed below each beta value. The smaller the standard error is relative to the beta, the more confidence we can have in the accuracy of our measured beta. A confidence level of 95% would be indicated by a beta which is approximately twice as large as its standard error. See the appendix for precise definitions and further explanation. NOTE: FOR PURPOSES OF CALCULATING THE REGRESSION COEFFICIENT (BETA), WEALTH IS MEASURED IN HUNDREDS OF DOLLARS AND THE FISCAL VARIABLE IS MEASURED IN DOLLARS.

Tables 11 through 37, are presented, where relevant, in pairs. For each variable the first table reports data in terms of nominal dollars and the second real dollars. The nominal dollar tables show the actual dollar values for each year. The figures in the real dollar tables are computed on the basis of zero price inflation over the FY 1970-77 period. All values are adjusted to reflect values in terms of the prices prevailing in 1972. (The government component of the GNP deflator is used to accomplish this price adjustment.)

## II. Data Analysis

### A. Tables 1 and 2: Regular and Special Student Enrollment in Grades K-12

The terms students, enrollment, and pupils are used interchangeably and unless otherwise indicated, refer to regular

enrollment as of September 30 of the year in question. From 1970 to 1977 the average district enrollment of regular students fell from 5464 to 4897 which constitutes an average annual rate of decline of 1.6 percent. The most dramatic declines have occurred in the De La Warr, Conrad, Marshallton-McKean, and Mt. Pleasant School Districts. This drop in enrollments since 1970, which we all know is nationwide, will undoubtedly have far reaching effects on school finance in years to come.

In contrast to regular school enrollments, average district special student enrollments have shown a steady increase from 178 in fiscal year 1970 to about 349 in fiscal year 1977. This is due, in part, to increased Federal programs and the potential loss of funds if programs are not in effect; to heightened interest at both the state and district levels in meeting the needs of special students; and finally to the increased likelihood of court litigation in situations where students needing special programs are not covered.

B. Table 3: Full Value of Real Estate Per Student

As this table indicates, the full value of real property increased in every district over the 1970-77 period while the variation among districts was substantial through the period. Evidence of this variation is apparent from 1) the $39,000-$49,000 range, 2) the high ratio of maximum to minimum, and 3) the large coefficient of variation--between .37 and .41. As following tables will show, the coefficient of variation for most educational inputs has been substantially smaller.

This is undoubtedly the outcome of the relatively large state role in the funding of public education in Delaware.

C. Table 4: Regular Student Enrollment Per Regular Teacher

Class size has dropped on average from 23.89 in 1970 to 21.52 in 1977. However, the drop has not been evenly distributed among school districts as evidenced by the substantial year to year differences in measures of the degree of dispersion among districts. It should be noted though that the dispersion measures indicate that there has been some narrowing of differences in class size since 1974.

Of greatest importance from a policy perspective is the negative and highly significant (except for 1976) correlation between class size and district real property per student. Wealthier districts have relatively higher proportions of secondary as opposed to elementary students. However, when this factor is taken into account, the correlations are still negative although not as significant. Such inequalities which are apparently associated with wealth differences are probably illegal in the context of a Serrano-type court decision. One favorable sign is the slight decline in the degree of negative correlation after 1974. Whether this is a trend or merely a temporary aberration cannot be determined until further data are accumulated.

D. Table 5: Special Students Per Special Teacher

As with regular class size, the average size of special classes has fallen from 16.64 in 1970 to 10.97 in 1977. Unlike

regular classes, however, the dispersion in class size for special students has fallen dramatically during the eight years in question. The coefficients of variation declined from a peak of .71 in 1971 to .19 in 1977. Moreover, the dispersion in special class size is apparently unrelated to district property wealth. None of the eight correlations between special class size and wealth is statistically significant and negative.

E. Tables 6 and 7: Special Elementary Students Per Special Elementary Teacher and Special Secondary Students Per Special Secondary Teacher

Tables 6 and 7 present summary statistics for only the FY 1973-1977 period because prior to the 1972-73 school year, data on special students per special teacher were published only in the aggregate. In the case of the elementary (secondary) special students, average class size has fallen from 12.46 (12.09) to 11.71 (11.97) over the period. Also, the distribution of special secondary and elementary students per teacher exhibit similar patterns of dispersion as evidenced by the coefficients of variation--which range from .27 to .38. Finally, and importantly, the inequalities which exist are uncorrelated with local district property wealth. This does not prove, however, that all special students are necessarily receiving an adequate education.

F. Tables 8, 9, and 10: State, Federal, and Local Revenue as a Percent of Total Receipts

The most important fact is that the state, on the average, has, during the period under study, contributed at least 71 percent of district revenue receipts. This figure has remained stable over the eight year period. Federal aid has been a relatively small portion of total revenue receipts with the Caesar Rodney, Capital, Appoquinimink and Wilmington School Districts tending to have the largest Federal shares. The Dover districts' large shares are attributable to the Dover Air Base while the latter are due to Title 1 funds. Local revenue receipts have been approximately 22 percent of total revenue receipts.

G. Tables 11-16: State Appropriations for Division I, II, and III Per Student Separately

Division I funds are categorical block grants for the payment of salaries of school district employees. The allocation of salaries for teachers, administrators, etc. is based on the number of units in the district. For example, a state grant is made for one elementary teacher for every 25 elementary students. The amount of state aid per unit is based on the teacher's experience and level of educational attainment. Districts can supplement the state aid from either local revenue or Division III funds.

Division I expenditures per students have been the slowest growing component of state aid growing at an average annual rate of real

growth of 0.9%. Note that all growth rates in dollar items are in terms of real dollars which have been adjusted for inflation. (See end of Section I for a discussion of nominal versus real values.) The dispersion of Division I aid per student is large, and it has been increasing over time. The range of Division I appropriations per student in 1977 was $398, and the coefficient of variation rose from .09 in 1970 to .11 in 1977.

Of most concern, however, is the fact that the variations in Division I expenditures per student are positively related to district property values per student. Simple correlation and beta coefficients (see Section I of this portion of the report for a description of beta coefficients) are positive in every year and statistically significant except for 1974 and 1975. The .20 approximate average value of the beta coefficient implies that in 1977 roughly $100 of the $398 difference in Division I expenditures per student between high property value and low property value districts is associated with their property value difference.

Since Division I appropriations per student for any given district are directly related to the average district level of teacher experience and educational attainment, a positive relationship between wealth and Division I expenditures implies that teachers with more experience and educational attainment compose a higher proportion of the staffs of wealthier districts. One of two factors which certainly lead to this kind of teacher distribution among districts is the higher salaries which

wealthier districts are able to offer through their greater supplementation of the Division I salary level. A second set of factors are the environmental characteristics of the wealthier districts which serve to attract many of the more qualified teachers.

Division II funds are categorical block grants for all purposes other than employee salaries, debt service, and transportation of students. In real terms, Division II appropriations have risen at an average annual rate of 5.7 percent. Although the dispersion of Division II expenditures per student has increased over the period, there is no evidence from the simple correlation or beta coefficients that it is systematically related to district wealth either positively or negatively.

Division III matching funds are distributed to districts on the basis of need and can be used to supplement either Division I or Division II kinds of expenditures. The allocation of funds is inversely related to school district wealth on a percentage equalization basis. The state's share of the equalization appropriation is 100 percent minus the local share except in no case can the State's share be more than 90 percent or less than 10 percent of the amount authorized. The local share is determined by dividing the local school district's financial ability per pupil times 50 percent times the amount authorized. Financial ability is defined as full value of taxable property per pupil.

Although Division III funding is clearly the smallest of the three components of state aid (less than 5 percent of the

total), it is the fastest growing at a real average annual rate of growth of 15 percent. Moreover and most importantly, the distribution of the funds clearly favors less wealthy districts. Simple Correlation and beta Coefficients are all negative and highly significant.

H. Tables 17 and 18: Total State Appropriations for Divisions I, II, and III Per Student

As a whole Division I, II, and III expenditures per student have risen at a real average annual rate of 1.7 percent. The extent of dispersion among districts if fairly large and has risen somewhat over the period. Of great interest is the fact that Division II and III funds per student have been able to largely offset the positive and unfavorable wealth relationship of Division I expenditures. Although all of the simple correlation and beta coefficients are positive, the only statistically significant one is that for 1970. Whether the courts would look at the total package of state aid or each of its three components cannot be determined. In any case, with Division I funds, the only unequalizing state aid component, declining from 89 percent of total aid in 1970 to 83 percent in 1977, there is at least a favorable trend underway.

I. Tables 19 and 20: Total State Revenue Receipts Per Student

The definitional difference between total state revenue receipts and the sum of Division I, II, and III funds (Tables 17 and 18) is that the former includes debt service, transportation

aid, and other appropriations (but not nonrevenue receipts). Although the extent of dispersion of Divisions I-III and of total state receipts is about the same, there is some difference in the statistical significance of their wealth relatedness. Only one of the Division I-III simple correlation coefficients is significant while four of the total state receipts simple correlation coefficients are positive and significant. It should be noted, however, that from 1974 to 1977 none of the simple correlation coefficients are significant, and all are much smaller than earlier ones.

J. Tables 21 and 22: Federal Revenue Receipts Per Student

Although it is not a primary concern of this study, it is interesting to see whether or not Federal revenues have been an equalizing or disequalizing force in Delaware. From 1970 to 1977 Federal revenues per student have more than doubled in Delaware growing at a real average annual rate of 6.3 percent. The highly significant and negative simple correlation and beta coefficients indicate that federal aid has had an equalizing influence.

K. Tables 23 and 24: Local Revenue Receipts Per Student

As an indicator of district willingness to pay for education, local revenue receipts display considerable dispersion among districts. The 1977 range in nominal dollars between the highest and the lowest was $786. The coefficients of variation are over 0.5 in every year. Of greatest interest is the high degree of

positive wealth relatedness of local revenue receipts. The simple correlation and beta coefficients are quite large and highly significant. Apparently, districts blessed with relatively large property values per student are more willing and/or more able to spend for education than are less wealthy districts. To the extent that this behavior makes the quality of education a function of local district wealth, Delaware is vulnerable to Serrano-type court suits. In addition, if it can be shown that this kind of local behavior has left some students without a "general and efficient" education, litigation similar to Robinson v. Cahill is possible.

L. Table 25: Tax Rates Per $100 Based on Full Valuation of Real Estate

In Serrano v. Priest the plaintiffs argued that low property wealth districts need much higher property tax rates to generate equal educational expenditure dollars compared to higher property wealth districts. Thus, the quality of education in California was seen to be a function of the value of taxable property in the district. As Table 25 shows, along with a rise in average tax rates of about 1.5 percent per year, there has been a substantial increase in the dispersion of tax rates among districts. By 1977 the highest tax rate was over five times as large as the lowest rate, and the coefficient of variation had risen from .33 to .42. The more important implications of this table relate to the insignificant relationship between tax rates and district wealth as evidenced by the statistical insignificance of all

the simple correlation and beta coefficients. It appears that rich districts do not put forth greater tax effort, (i.e., impose higher tax rates) than less wealthy districts. The greater amount of local revenue raised by wealthier districts, shown in the previous tables, (Tables 23 and 24) must be due mainly to their greater fiscal capacity.

M. Tables 26 and 27: Total Current Expenditures Per Student

Given the fact that the State of Delaware funds about 71 percent of expenditures on elementary and secondary education (Table 8), we would expect relatively little interdistrict inequality in total current expenditures per student. Yet, the various measures of dispersion show that there is a substantial amount of inequality in total current expenditures per student. The highest expenditure district spent almost twice as much per student as did the lowest expenditure district in 1977. Moreover, the simple correlation and beta coefficients reveal a strong positive relationship between wealth and current expenditures per student. The size of the beta coefficient indicates that for each interdistrict difference in the full value of real estate of $1000, there was a difference in total current expenditures (adjusted for price changes - Table 27) per student of $12.11 in 1977.

N. Tables 28 and 29: Instructional Expenditures Per Student

Instructional expenditures are a major part of current expenditures. Although instructional expenditures have increased somewhat less rapidly than current expenditures over the period

(1.9% vs. 3.0% in real terms), the extent of dispersion and the strong positive relationship to district wealth are roughly the same.

O. Tables 30 and 31: Transportation Expenditures Per Student

Currently, all approved transportation costs are borne by the state except for students in special schools whose transportation is paid for out of tuition which is derived from local taxes. In real terms the average annual rise in district per student transportation expenditures has been 4.9 percent. The differentials in spending by district are fairly large, but these differences are related to transportation needs. There is no correlation between transportation expenditures and property wealth.

P. Tables 32 and 33: Expenditures for Plant Operations Per Student

Plant operations spending involves expenditures for which Division II state aid is used. These expenditures have been increasing fairly rapidly at an average annual real rate of 5.4 percent. The dispersion in per-student-spending levels among districts is large, and given the significant simple correlation and beta coefficients, it appears that wealthier districts tend to spend more per student on operations than do less wealthy districts.

Q. Tables 34 and 35: Expenditures For Plant Maintenance Per Student

Plant maintenance spending is another Division II type

expenditure. Like plant operations spending, real plant maintenance expenditures has also increased rapidly at an average annual rate of 7.4 percent. However, the expenditures per student differences among districts are much greater. In 1977 the highest spending district spent $129.90 per student on Plant maintenance while the lowest spending district spent only $16.56. The association of this type of spending with district wealth is positive but not very significant.

R. Tables 36 and 37: Capital Outlays Per Student

Major and minor capital expenditures require a state (local) payment of 60 (40) percent of the approved cost. This could work against poorer districts that might not be able to foot the 40 percent local share. Because of the lumpiness and nonrecurring nature of many types of capital outlays, it is not surprising to observe great dispersion in this category of expenditures. For instance, the coefficient of variation for total current expenditures is between .12 and .17 while that for capital is between 1.30 and 2.66. The expectation that less wealthy districts may not be able to afford capital projects to the same extent as wealthier districts is borne out of the fact that the simple correlations between property wealth and capital outlays are statistically significant and positive in 6 of the 8 years being examined.

S. Tables 38-39: Achievement Scores

The data shown in Table 38 are the district average total aptitude scores for grade four for fiscal years 1970-1976. The

main points to note are that 1) the average score has hovered in the range between 49.5 and 50, 2) the dispersion has been relatively large as exhibited by the coefficient of variation, and most importantly 3) a positive correlation is observed between district wealth and achievement scores.

Because fourth grade scores may be an input rather than an output, the correlations were redone using data on achievement scores for eighth graders in FY 1977. In addition, the wealth measure employed is a better measure (see Volume 5 of this report for a description of the improved wealth measure). These correlations are shown for nine different test scores in Table 39. Each of the nine different district average achievement measures exhibits a high degree of wealth relatedness. This may suggest that a "general and efficient" education is not being provided to students in the state.

## Appendix III-A: Definitions of Some Statistics

### Standard Deviation

The standard deviation for educational input X in year t is calculated from the formula

$$(1) \quad S = \frac{\Sigma (X_i - \bar{X})^2}{n-1}$$

where $X_i$ is the observed value of the variable for district i in some year, $\bar{X}$ is the mean value for the state for the year and n is the number of regular school districts.

### Coefficient of Variation

The coefficient of variation is calculated as

$$CV = \frac{S}{\bar{X}},$$

when S and $\bar{X}$ are respectively the standard deviation (see above definition) and the mean associated with the particular educational variable.

### Simple Correlation Coefficient

The simple correlation coefficient can be calculated by

$$r = \frac{\Sigma W_i Y_i - n\bar{W}\bar{Y}}{nS_w S_y}$$

where $W_i$ and $\bar{W}$ refer to the property wealth per student in district i in some year and the average in the state for the year; $Y_i$ and $\bar{Y}$ refer to the district values per student for the particular educational input under study in some year and the average for the state for the year, n is the number of regular school districts (23); and finally,

$S_w$ and $S_y$ are respectively the standard deviations around W and Y.

beta Coefficient

The formula for calculating the Beta Coefficient (bivariate regression coefficient) is as follows:

$$\text{Beta} = \frac{\Sigma(W_i - \bar{W})\ (Y_i - \bar{Y})}{\Sigma(W_i - \bar{W})^2}$$

The variables are defined as for the Simple Correlation Coefficient.

TABLE 1 REGULAR STUDENT ENROLLMENTS IN GRADES K-12(SEPT. 30)

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | % CHANGE |
|---|---|---|---|---|---|---|---|---|---|
| CAESAR RODNEY | 7799 | 8011 | 7796 | 7699 | 7685 | 7431 | 7392 | 7189 | -1.16 |
| LAKE FOREST | 3124 | 3183 | 3363 | 3365 | 3418 | 3360 | 3378 | 3327 | 0.90 |
| DE LA WARR | 4248 | 4045 | 3895 | 3676 | 3166 | 2799 | 2646 | 2431 | -7.67 |
| MILFORD | 4008 | 4038 | 3999 | 4022 | 3941 | 3842 | 3913 | 3719 | -1.06 |
| LAUREL | 2178 | 2110 | 2150 | 2152 | 2097 | 2117 | 2062 | 2097 | -0.54 |
| SMYRNA | 2736 | 2772 | 3006 | 3059 | 2956 | 2983 | 2824 | 2863 | 0.65 |
| WOODBRIDGE | 2105 | 2116 | 2179 | 2148 | 2104 | 2056 | 2005 | 1936 | -1.19 |
| NC-GUNNING BEDFORD | 8053 | 8310 | 9019 | 8913 | 8924 | 8822 | 8538 | 8087 | 0.06 |
| NEWARK | 14573 | 15138 | 15313 | 15544 | 15900 | 15978 | 16277 | 16209 | 1.53 |
| DELMAR | 667 | 663 | 662 | 692 | 695 | 698 | 733 | 778 | 2.22 |
| APPOQUINIMINK | 2249 | 2115 | 2113 | 2134 | 2130 | 2117 | 2062 | 2008 | -1.61 |
| STANTON | 5680 | 5813 | 5918 | 5827 | 5604 | 5339 | 5065 | 4521 | -3.21 |
| SEAFORD | 3625 | 3652 | 3673 | 3646 | 3682 | 3617 | 3624 | 3484 | -0.57 |
| CONRAD | 6756 | 6684 | 6475 | 6177 | 5821 | 5240 | 4826 | 4234 | -6.46 |
| CLAYMONT | 3730 | 3820 | 3828 | 3722 | 3507 | 3326 | 3074 | 2821 | -3.91 |
| WILMINGTON | 14431 | 14188 | 14309 | 14031 | 13469 | 13331 | 12811 | 12288 | -2.27 |
| CAPITAL | 6496 | 6795 | 6754 | 6576 | 6460 | 6307 | 6214 | 6120 | -0.85 |
| MARSHALLTON-MCKEAN | 4620 | 4584 | 4446 | 4234 | 3947 | 3741 | 3538 | 3143 | -5.36 |
| ALFRED I DUPONT | 10163 | 10455 | 11320 | 11254 | 10954 | 10672 | 9906 | 8806 | -2.03 |
| MOUNT PLEASANT | 5924 | 5905 | 5677 | 5465 | 5223 | 5002 | 4592 | 4150 | -4.96 |
| INDIAN RIVER | 5991 | 6124 | 6203 | 6274 | 6263 | 6135 | 6080 | 6071 | 0.19 |
| CAPE HENLOPEN | 3706 | 3725 | 3616 | 3609 | 3661 | 3638 | 3576 | 3396 | -1.24 |
| ALEXIS I DUPONT | 2819 | 2887 | 3035 | 3263 | 3273 | 3258 | 3136 | 2953 | 0.67 |

STATISTICS FOR TABLE 1

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | % CHANGE |
|---|---|---|---|---|---|---|---|---|---|
| MEAN | 5464.30 | 5527.52 | 5597.78 | 5542.70 | 5429.57 | 5296.04 | 5142.26 | 4897.00 | -1.55 |

Note: Total regular enrollments in Delaware as of September 30 of a given fiscal year for grades K-12; required by law as a basis for calculation of units of pupils (Source: Report of Educational Statistics).

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TABLE 2 SPECIAL STUDENT ENROLLMENTS IN GRADES K-12(SEPT. 30)

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| CAESAR RODNEY | 262 | 337 | 358 | 347 | 419 | 469 | 481 | 482 |
| LAKE FOREST | 107 | 90 | 99 | 137 | 199 | 260 | 257 | 253 |
| DE LA WARR | 231 | 264 | 270 | 393 | 472 | 503 | 526 | 526 |
| MILFORD | 114 | 120 | 121 | 150 | 159 | 180 | 166 | 195 |
| LAUREL | 53 | 58 | 81 | 81 | 138 | 130 | 137 | 121 |
| SMYRNA | 0 | 8 | 13 | 36 | 167 | 207 | 276 | 276 |
| WOODBRIDGE | 54 | 53 | 34 | 44 | 53 | 53 | 53 | 82 |
| NC-GUNNING BEDFORD | 126 | 145 | 248 | 274 | 332 | 375 | 478 | 528 |
| NEWARK | 334 | 436 | 475 | 495 | 577 | 662 | 646 | 684 |
| DELMAR | 0 | 0 | 10 | 0 | 8 | 5 | 5 | 5 |
| APPOQUINIMINK | 195 | 271 | 271 | 271 | 307 | 335 | 339 | 335 |
| STANTON | 330 | 346 | 253 | 247 | 262 | 258 | 271 | 301 |
| SEAFORD | 228 | 236 | 244 | 159 | 167 | 162 | 188 | 196 |
| CONRAD | 154 | 180 | 213 | 238 | 283 | 434 | 508 | 593 |
| CLAYMONT | 46 | 48 | 84 | 88 | 139 | 178 | 232 | 231 |
| WILMINGTON | 889 | 990 | 1018 | 1098 | 1219 | 1088 | 1041 | 1076 |
| CAPITAL | 220 | 231 | 278 | 324 | 356 | 364 | 348 | 349 |
| MARSHALLTON-MCKEAN | 104 | 113 | 113 | 129 | 192 | 190 | 175 | 221 |
| ALFRED I DUPONT | 194 | 213 | 222 | 222 | 297 | 310 | 355 | 412 |
| MOUNT PLEASANT | 174 | 172 | 161 | 156 | 201 | 276 | 276 | 259 |
| INDIAN RIVER | 140 | 167 | 228 | 361 | 402 | 489 | 460 | 529 |
| CAPE HENLOPEN | 89 | 92 | 190 | 190 | 214 | 205 | 215 | 246 |
| ALEXIS I DUPONT | 44 | 47 | 61 | 50 | 42 | 52 | 122 | 136 |

STATISTICS FOR TABLE 2

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| MEAN | 177.73 | 200.74 | 219.35 | 238.70 | 287.17 | 312.39 | 328.91 | 349.39 |

Note: Number of children enrolled in special programs as of September 30 of a given fiscal year for grades K-12. (Source: Report of Educational Statistics).

TABLE 3 FULL VALUE OF REAL ESTATE PER TOTAL ENROLLMENT

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| CAESAR RODNEY | 10428.19 | 11278.04 | 10796.15 | 11648.27 | 12221.50 | 13009.43 | 13507.35 | 14055.32 |
| LAKE FOREST | 15300.22 | 16139.12 | 15679.62 | 16310.06 | 16590.27 | 17589.04 | 18489.91 | 19373.37 |
| DE LA WARR | 12448.57 | 13111.99 | 13797.63 | 14253.45 | 17536.29 | 21594.74 | 21938.57 | 24715.65 |
| MILFORD | 16633.54 | 17336.31 | 17785.89 | 18550.20 | 19765.92 | 21235.52 | 22102.13 | 23753.95 |
| LAUREL | 15721.19 | 16780.55 | 16448.61 | 16807.91 | 17438.65 | 17896.31 | 19154.39 | 20310.05 |
| SMYRNA | 20541.20 | 20206.60 | 19255.29 | 19525.22 | 20309.90 | 20620.25 | 24272.81 | 25136.92 |
| WOODBRIDGE | 15003.92 | 15584.12 | 15232.19 | 16258.48 | 17307.72 | 18806.96 | 20342.75 | 21846.32 |
| NC-GUNNING BEDFORD | 19557.39 | 20200.14 | 18862.57 | 19678.61 | 21485.11 | 25122.77 | 27460.22 | 29946.86 |
| NEWARK | 16559.55 | 17137.67 | 18144.39 | 19555.72 | 20939.46 | 23524.40 | 25407.89 | 27530.79 |
| DELMAR | 22388.11 | 23160.11 | 22937.43 | 23729.79 | 23484.55 | 23457.58 | 23526.66 | 24750.53 |
| APPOQUINIMINK | 13984.33 | 14728.77 | 15265.70 | 15588.89 | 16922.62 | 18199.77 | 22346.36 | 24864.60 |
| STANTON | 15673.85 | 16018.64 | 17095.08 | 18377.13 | 20931.64 | 23591.77 | 27431.13 | 31655.36 |
| SEAFORD | 18762.84 | 19487.71 | 20064.21 | 21398.59 | 22442.94 | 23694.02 | 24554.54 | 27757.29 |
| CONRAD | 18989.13 | 19281.34 | 19866.86 | 20787.17 | 24030.91 | 26560.52 | 28215.91 | 31860.12 |
| CLAYMONT | 18241.64 | 19658.15 | 21012.71 | 21788.26 | 25045.15 | 26696.69 | 29516.48 | 32892.50 |
| WILMINGTON | 27170.76 | 28358.35 | 27656.79 | 28242.83 | 31999.88 | 34102.82 | 35976.75 | 37290.48 |
| CAPITAL | 24563.90 | 24681.47 | 25779.79 | 27410.77 | 29326.12 | 31126.47 | 34019.63 | 35752.10 |
| MARSHALLTON-MCKEAN | 18569.92 | 19066.82 | 19898.16 | 21186.08 | 24565.92 | 27642.05 | 29879.69 | 34264.41 |
| ALFRED I DUPONT | 23586.53 | 23758.99 | 22992.86 | 24014.99 | 26944.77 | 30776.48 | 34354.01 | 39054.23 |
| MOUNT PLEASANT | 25235.32 | 26138.37 | 27668.38 | 29213.23 | 33301.68 | 37282.58 | 41294.15 | 45931.21 |
| INDIAN RIVER | 23859.26 | 24909.67 | 26191.47 | 27746.44 | 33117.65 | 36541.67 | 41171.38 | 44880.56 |
| CAPE HENLOPEN | 30695.12 | 33089.55 | 34525.47 | 37512.66 | 41248.35 | 47767.01 | 52153.54 | 58682.97 |
| ALEXIS I DUPONT | 52059.28 | 52023.08 | 52776.53 | 50572.51 | 55596.19 | 55420.52 | 58332.93 | 62834.49 |

STATISTICS FOR TABLE 3

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| MEAN | 20694.51 | 21397.20 | 21727.55 | 22615.53 | 24893.62 | 27054.76 | 29367.36 | 32136.53 |
| MINIMUM | 10428.19 | 11278.04 | 10796.15 | 11648.27 | 12221.50 | 13009.43 | 13507.35 | 14055.32 |
| MAXIMUM | 52059.28 | 52023.08 | 52776.53 | 50572.51 | 55596.19 | 55420.52 | 58332.93 | 62834.49 |
| RANGE | 41631.09 | 40745.04 | 41980.38 | 38924.24 | 43374.69 | 42411.09 | 44825.58 | 48779.17 |
| MAX/MIN | 4.99 | 4.61 | 4.89 | 4.34 | 4.55 | 4.26 | 4.32 | 4.47 |
| STANDARD DEVIATION | 8432.78 | 8417.13 | 8641.07 | 8405.34 | 9492.21 | 9962.96 | 10767.73 | 11975.76 |
| COEFF. OF VAR. | 0.41 | 0.39 | 0.40 | 0.37 | 0.38 | 0.37 | 0.37 | 0.37 |

Note: Based on September 30 enrollments and Full Value of real estate as calculated by the Delaware Department of Instruction (Source: Report of Educational Statistics).

TABLE 4 REGULAR STUDENT ENROLLMENT PER REGULAR CLASSROOM TEACHER

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| CAESAR RODNEY | 24.53 | 24.65 | 23.70 | 23.47 | 22.94 | 21.79 | 22.00 | 21.78 |
| LAKE FOREST | 23.49 | 23.23 | 25.67 | 23.05 | 24.24 | 22.25 | 22.08 | 21.60 |
| DE LA WARR | 24.27 | 22.85 | 21.88 | 23.41 | 24.54 | 24.77 | 23.21 | 20.43 |
| MILFORD | 24.59 | 24.33 | 25.47 | 24.38 | 23.88 | 23.01 | 23.57 | 23.24 |
| LAUREL | 25.03 | 22.93 | 22.40 | 23.14 | 23.30 | 22.28 | 21.71 | 22.07 |
| SMYRNA | 23.38 | 24.97 | 24.05 | 23.00 | 23.65 | 22.60 | 21.56 | 20.90 |
| WOODBRIDGE | 23.92 | 24.32 | 25.05 | 23.87 | 23.64 | 22.35 | 24.45 | 23.33 |
| NC-GUNNING BEDFORD | 23.62 | 23.15 | 23.73 | 23.52 | 23.86 | 23.22 | 22.65 | 22.91 |
| NEWARK | 25.75 | 22.07 | 22.79 | 23.06 | 23.18 | 22.47 | 22.18 | 21.16 |
| DELMAR | 21.52 | 20.09 | 20.69 | 20.97 | 20.44 | 21.81 | 20.94 | 21.61 |
| APPOQUINIMINK | 22.49 | 19.05 | 19.04 | 21.78 | 21.52 | 20.96 | 19.09 | 20.49 |
| STANTON | 25.13 | 24.02 | 23.39 | 24.18 | 23.45 | 22.82 | 22.41 | 22.05 |
| SEAFORD | 23.69 | 23.87 | 24.82 | 25.32 | 25.93 | 24.61 | 24.16 | 22.77 |
| CONRAD | 25.12 | 24.39 | 23.89 | 23.22 | 22.22 | 21.04 | 20.71 | 19.51 |
| CLAYMONT | 24.22 | 23.01 | 23.63 | 23.41 | 22.77 | 22.78 | 22.12 | 22.57 |
| WILMINGTON | 21.47 | 20.56 | 21.75 | 20.39 | 19.49 | 19.69 | 18.95 | 19.08 |
| CAPITAL | 23.71 | 22.96 | 23.29 | 24.82 | 24.66 | 24.07 | 22.60 | 22.92 |
| MARSHALLTON-MCKEAN | 24.06 | 23.75 | 22.80 | 22.64 | 21.45 | 20.78 | 20.81 | 20.68 |
| ALFRED I DUPONT | 23.63 | 21.16 | 23.24 | 22.83 | 22.49 | 22.90 | 21.96 | 21.22 |
| MOUNT PLEASANT | 23.79 | 22.62 | 21.92 | 22.49 | 21.32 | 20.67 | 21.06 | 20.24 |
| INDIAN RIVER | 25.71 | 25.10 | 24.23 | 24.04 | 24.00 | 23.42 | 22.86 | 23.08 |
| CAPE HENLOPEN | 24.71 | 23.73 | 23.33 | 23.28 | 23.62 | 22.32 | 22.49 | 21.09 |
| ALEXIS I DUPONT | 21.68 | 20.05 | 19.21 | 20.78 | 19.03 | 19.28 | 20.91 | 20.23 |

STATISTICS FOR TABLE 4

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| MEAN | 23.89 | 22.91 | 23.04 | 23.09 | 22.85 | 22.26 | 21.93 | 21.52 |
| MINIMUM | 21.47 | 19.05 | 19.04 | 20.39 | 19.03 | 19.28 | 18.95 | 19.08 |
| MAXIMUM | 25.75 | 25.10 | 25.67 | 25.32 | 25.93 | 24.77 | 24.45 | 23.33 |
| RANGE | 4.28 | 6.05 | 6.63 | 4.93 | 6.90 | 5.49 | 5.50 | 4.25 |
| MAX/MIN | 1.20 | 1.32 | 1.35 | 1.24 | 1.36 | 1.28 | 1.29 | 1.22 |
| STANDARD DEVIATION | 1.20 | 1.68 | 1.73 | 1.21 | 1.67 | 1.40 | 1.36 | 1.22 |
| COEFF. OF VAR. | 0.05 | 0.07 | 0.08 | 0.05 | 0.07 | 0.06 | 0.06 | 0.06 |
| SIMPLE CORR(FULL VAL | -0.448 | -0.374 | -0.434 | -0.385 | -0.480 | -0.364 | -0.195 | -0.286 |
| (SIGNIFICANCE LEVEL) | (.016) | (.040) | (.019) | (.035) | (.010) | (.044) | (.186) | (.093) |

Note: Total regular enrollments divided by regular teachers for grades K-12 (Source: Report of Educational Statistics).

TABLE 5 SPECIAL STUDENT ENROLLMENT PER SPECIAL CLASSROOM TEACHER

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| CAESAR RODNEY | 13.79 | 19.82 | 15.57 | 11.57 | 13.97 | 11.44 | 10.02 | 9.84 |
| LAKE FOREST | 15.29 | 11.25 | 12.38 | 13.70 | 15.31 | 12.38 | 11.17 | 11.50 |
| DE LA WARR | 12.16 | 14.67 | 14.21 | 11.91 | 11.80 | 10.27 | 9.74 | 10.73 |
| MILFORD | 22.80 | 10.91 | 20.17 | 11.54 | 12.23 | 12.86 | 11.07 | 9.75 |
| LAUREL | 13.25 | 14.50 | 16.20 | 11.57 | 17.25 | 10.83 | 12.45 | 11.00 |
| SMYRNA | 0.00 | 8.00 | 6.50 | 9.00 | 15.18 | 12.18 | 15.33 | 14.53 |
| WOODBRIDGE | 13.50 | 17.67 | 11.33 | 14.67 | 13.25 | 13.25 | 15.75 | 13.67 |
| NC-GUNNING BEDFORD | 18.00 | 13.18 | 12.40 | 11.42 | 11.07 | 11.03 | 11.12 | 12.28 |
| NEWARK | 4.07 | 11.78 | 10.80 | 9.71 | 8.49 | 8.60 | 8.18 | 7.69 |
| DELMAR | 0.00 | 0.00 | ******** | 0.00 | 8.00 | ******** | 5.00 | 5.00 |
| APPOQUINIMINK | 39.00 | 67.75 | 67.75 | 12.32 | 14.62 | 15.23 | 14.74 | 11.17 |
| STANTON | 11.79 | 13.31 | 11.50 | 9.15 | 9.03 | 9.56 | 8.74 | 9.41 |
| SEAFORD | 16.29 | 15.73 | 15.25 | 12.23 | 11.13 | 10.13 | 11.75 | 10.32 |
| CONRAD | 14.00 | 15.00 | 19.36 | 13.22 | 14.89 | 22.84 | 14.11 | 13.79 |
| CLAYMONT | 15.33 | 16.00 | 16.80 | 11.00 | 10.69 | 12.71 | 12.89 | 12.83 |
| WILMINGTON | 17.43 | 17.37 | 18.51 | 14.84 | 15.24 | 12.80 | 13.18 | 13.79 |
| CAPITAL | 16.92 | 19.25 | 21.38 | 12.46 | 11.87 | 12.55 | 12.00 | 11.63 |
| MARSHALLTON-MCKEAN | 14.86 | 11.30 | 11.30 | 14.33 | 12.00 | 12.67 | 9.72 | 10.52 |
| ALFRED I DUPONT | 19.40 | 21.30 | 24.67 | 11.10 | 12.91 | 11.48 | 9.34 | 10.30 |
| MOUNT PLEASANT | 10.88 | 11.47 | 11.50 | 11.14 | 11.17 | 12.00 | 10.62 | 9.59 |
| INDIAN RIVER | 15.56 | 16.70 | 17.54 | 12.45 | 11.49 | 12.54 | 10.45 | 10.80 |
| CAPE HENLOPEN | 17.80 | 8.36 | 14.62 | 12.67 | 12.59 | 12.06 | 10.75 | 11.71 |
| ALEXIS I DUPONT | 44.00 | 15.67 | 20.33 | 12.50 | 10.50 | 13.00 | 10.17 | 10.46 |

STATISTICS FOR TABLE 5

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| MEAN | 16.64 | 16.86 | 17.73 | 12.02 | 12.37 | 12.38 | 11.23 | 10.97 |
| MINIMUM | 0.00 | 8.00 | 6.50 | 9.00 | 8.00 | 8.60 | 5.00 | 5.00 |
| MAXIMUM | 44.00 | 67.75 | 67.75 | 14.84 | 17.25 | 22.84 | 15.75 | 14.53 |
| RANGE | 44.00 | 59.75 | 61.25 | 5.84 | 9.25 | 14.24 | 10.75 | 9.53 |
| MAX/MIN | ******** | 8.47 | 10.42 | 1.65 | 2.16 | 2.66 | 3.15 | 2.91 |
| STANDARD DEVIATION | 9.40 | 11.89 | 11.97 | 1.58 | 2.35 | 2.74 | 2.46 | 2.10 |
| COEFF. OF VAR. | 0.56 | 0.71 | 0.68 | 0.13 | 0.19 | 0.22 | 0.22 | 0.19 |
| SIMPLE CORR(FULL VAL | 0.516 | -0.165 | -0.026 | 0.150 | -0.256 | 0.072 | -0.122 | 0.047 |
| (SIGNIFICANCE LEVEL) | (.007) | (.231) | (.454) | (.253) | (.119) | (.375) | (.290) | (.415) |

Note: Total special enrollments divided by total special teachers in grades K-12 (Source: Report of Educational Statistics).

TABLE 6

STATISTICS: SPECIAL ELEMENTARY ENROLLMENT PER SPECIAL ELEMENTARY CLASSROOM TEACHER

| | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|
| MEAN | 12.46 | 12.97 | 12.71 | 12.33 | 11.71 |
| MINIMUM | 6.50 | 6.17 | 7.43 | 6.00 | 6.64 |
| MAXIMUM | 17.33 | 23.00 | 25.20 | 23.67 | 19.86 |
| RANGE | 10.83 | 16.83 | 17.77 | 17.67 | 13.22 |
| MAX/MIN | 2.67 | 3.73 | 3.39 | 3.95 | 2.99 |
| STANDARD DEVIATION | 3.33 | 4.21 | 3.99 | 4.48 | 3.57 |
| COEFF. OF VAR. | 0.27 | 0.32 | 0.31 | 0.36 | 0.30 |
| SIMPLE CORR(FULL VAL<br>(SIGNIFICANCE LEVEL) | 0.245<br>(.136) | 0.011<br>(.481) | 0.051<br>(.411) | -0.253<br>(.128) | 0.007<br>(.488) |

TABLE 7

STATISTICS: SPECIAL SECONDARY ENROLLMENT PER SPECIAL SECONDARY CLASSROOM TEACHER

| | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|
| MEAN | 12.09 | 13.22 | 13.10 | 11.57 | 11.97 |
| MINIMUM | 6.40 | 3.50 | 7.23 | 5.00 | 5.00 |
| MAXIMUM | 20.80 | 23.83 | 20.22 | 18.14 | 19.29 |
| RANGE | 14.40 | 20.33 | 12.99 | 13.14 | 14.29 |
| MAX/MIN | 3.25 | 6.81 | 2.80 | 3.63 | 3.86 |
| STANDARD DEVIATION | 4.30 | 5.02 | 3.66 | 3.56 | 4.06 |
| COEFF. OF VAR. | 0.36 | 0.38 | 0.28 | 0.31 | 0.34 |
| SIMPLE CORR(FULL VAL | -0.225 | -0.174 | -0.079 | -0.008 | -0.048 |
| (SIGNIFICANCE LEVEL) | (.151) | (.213) | (.361) | (.485) | (.420) |

TABLE 8 STATE REVENUE RECEIPTS AS A PERCENTAGE OF TOTAL REVENUE RECEIPTS

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| CAESAR RODNEY | 61.11 | 62.06 | 62.18 | 62.49 | 62.21 | 63.05 | 62.79 | 63.32 |
| LAKE FOREST | 79.39 | 81.95 | 80.78 | 82.44 | 82.06 | 82.60 | 80.63 | 81.52 |
| DE LA WARR | 76.78 | 76.78 | 72.75 | 72.14 | 70.49 | 70.39 | 71.98 | 75.38 |
| MILFORD | 77.16 | 77.71 | 77.57 | 78.03 | 78.64 | 79.86 | 80.81 | 84.18 |
| LAUREL | 73.81 | 68.83 | 68.65 | 78.65 | 78.27 | 78.37 | 80.02 | 76.87 |
| SMYRNA | 77.37 | 77.05 | 79.74 | 79.60 | 80.64 | 80.96 | 79.13 | 78.83 |
| WOODBRIDGE | 3.65 | 85.02 | 83.19 | 84.63 | 84.33 | 85.77 | 81.19 | 84.72 |
| NC-GUNNING BEDFORD | 71.15 | 70.22 | 70.90 | 57.22 | 70.03 | 69.53 | 72.04 | 73.01 |
| NEWARK | 69.75 | 69.61 | 68.38 | 69.71 | 67.67 | 67.35 | 66.69 | 66.53 |
| DELMAR | 86.18 | 86.96 | 85.28 | 86.56 | 82.05 | 84.82 | 84.90 | 86.57 |
| APPOQUINIMINK | 81.60 | 78.41 | 75.98 | 75.97 | 70.16 | 68.44 | 71.14 | 70.02 |
| STANTON | 69.60 | 69.91 | 70.64 | 72.06 | 72.26 | 69.58 | 67.53 | 67.91 |
| SEAFORD | 81.97 | 81.87 | 79.26 | 81.12 | 78.23 | 77.71 | 80.50 | 81.96 |
| CONRAD | 73.46 | 75.04 | 73.14 | 73.39 | 73.31 | 71.92 | 72.93 | 72.24 |
| CLAYMONT | 69.52 | 68.98 | 68.26 | 71.10 | 70.22 | 67.23 | 69.01 | 67.14 |
| WILMINGTON | 62.41 | 58.08 | 54.46 | 51.59 | 50.80 | 52.38 | 51.32 | 50.21 |
| CAPITAL | 69.55 | 73.94 | 73.61 | 73.06 | 72.15 | 68.65 | 67.47 | 68.69 |
| MARSHALLTON-MCKEAN | 63.61 | 66.50 | 64.53 | 68.35 | 69.13 | 67.96 | 70.14 | 69.02 |
| ALFRED I DUPONT | 67.87 | 66.10 | 65.52 | 67.37 | 66.02 | 63.76 | 65.23 | 65.47 |
| MOUNT PLEASANT | 65.89 | 67.05 | 64.08 | 65.52 | 65.19 | 65.10 | 65.89 | 65.43 |
| INDIAN RIVER | 79.81 | 80.33 | 78.41 | 81.29 | 79.13 | 78.61 | 77.45 | 78.18 |
| CAPE HENLOPEN | 71.45 | 70.53 | 68.83 | 69.66 | 68.90 | 63.57 | 67.30 | 65.76 |
| ALEXIS I DUPONT | 56.41 | 54.08 | 55.54 | 58.02 | 55.86 | 55.09 | 57.90 | 57.64 |

STATISTICS FOR TABLE 8

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| MEAN | 72.59 | 72.48 | 71.38 | 72.17 | 71.64 | 70.99 | 71.48 | 71.76 |
| MINIMUM | 56.41 | 54.08 | 54.46 | 51.59 | 50.80 | 52.38 | 51.32 | 50.21 |
| MAXIMUM | 86.18 | 86.96 | 85.28 | 86.56 | 86.56 | 85.77 | 84.90 | 86.57 |
| RANGE | 29.77 | 32.88 | 30.82 | 34.97 | 35.76 | 33.39 | 33.58 | 36.36 |
| MAX/MIN | 1.53 | 1.61 | 1.57 | 1.68 | 1.70 | 1.64 | 1.65 | 1.72 |
| STANDARD DEVIATION | 7.75 | 8.33 | 8.15 | 9.08 | 8.36 | 8.89 | 8.29 | 9.06 |
| COEFF. OF VAR. | 0.11 | 0.11 | 0.11 | 0.13 | 0.12 | 0.13 | 0.12 | 0.13 |

Note: State revenue receipts consist of state aid to districts for Division I, II, and III, debt service, transportation and other appropriations. Total revenue receipts include revenue receipts received from state, federal and local sources but do not include nonrevenue receipts such as from the sale of bonds or sale of school district property. (Sources: Report of Educational Statistics and unpublished data on debt service).

TABLE 9 FEDERAL REVENUE RECEIPTS AS A PERCENTAGE OF TOTAL REVENUE RECEIPTS

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| CAESAR RODNEY | 26.83 | 27.38 | 28.22 | 28.72 | 29.05 | 28.51 | 29.43 | 29.26 |
| LAKE FOREST | 6.52 | 4.41 | 4.67 | 3.64 | 4.46 | 4.77 | 7.46 | 6.14 |
| DE LA WARR | 2.92 | 3.80 | 9.32 | 10.32 | 7.76 | 8.30 | 6.81 | 5.31 |
| MILFORD | 6.53 | 8.36 | 9.78 | 10.24 | 9.29 | 8.18 | 8.03 | 4.49 |
| LAUREL | 13.40 | 14.25 | 14.84 | 12.53 | 10.56 | 10.01 | 7.75 | 13.01 |
| SMYRNA | 1.71 | 4.39 | 4.84 | 4.38 | 3.90 | 4.50 | 6.16 | 6.31 |
| WOODBRIDGE | 4.46 | 3.49 | 4.44 | 3.74 | 4.24 | 4.25 | 8.92 | 6.09 |
| NC-GUNNING BEDFORD | 0.77 | 1.41 | 1.55 | 1.26 | 1.75 | 1.60 | 1.70 | 1.61 |
| NEWARK | 2.65 | 2.45 | 2.08 | 2.46 | 2.67 | 3.20 | 3.09 | 2.44 |
| DELMAR | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| APPOQUINIMINK | 3.81 | 7.88 | 8.21 | 8.21 | 10.34 | 12.21 | 11.01 | 12.78 |
| STANTON | 0.97 | 1.13 | 1.46 | 1.37 | 0.97 | 1.85 | 1.99 | 2.23 |
| SEAFORD | 4.07 | 4.03 | 5.49 | 3.00 | 5.48 | 3.99 | 5.80 | 4.18 |
| CONRAD | 0.68 | 1.62 | 1.90 | 4.19 | 3.00 | 3.08 | 4.27 | 3.94 |
| CLAYMONT | 2.41 | 2.53 | 2.94 | 2.29 | 2.22 | 2.73 | 3.52 | 3.63 |
| WILMINGTON | 13.92 | 14.16 | 15.35 | 14.08 | 14.51 | 13.78 | 16.98 | 18.25 |
| CAPITAL | 8.97 | 5.10 | 6.03 | 5.01 | 7.68 | 10.16 | 11.51 | 10.19 |
| MARSHALLTON-MCKEAN | 3.59 | 2.27 | 2.06 | 1.85 | 1.45 | 2.09 | 2.03 | 1.69 |
| ALFRED I DUPONT | 1.08 | 0.75 | 0.91 | 0.76 | 0.63 | 0.74 | 0.50 | 0.76 |
| MOUNT PLEASANT | 0.55 | 0.67 | 0.81 | 1.13 | 1.05 | 0.43 | 0.53 | 1.48 |
| INDIAN RIVER | 4.10 | 4.30 | 5.88 | 3.93 | 4.46 | 4.71 | 6.66 | 6.07 |
| CAPE HENLOPEN | 2.24 | 3.20 | 3.90 | 2.96 | 2.37 | 2.34 | 3.75 | 2.17 |
| ALEXIS I DUPONT | 0.92 | 1.14 | 1.18 | 0.87 | 0.53 | 1.17 | 0.95 | 2.75 |

STATISTICS FOR TABLE 9

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| MEAN | 4.92 | 5.16 | 5.91 | 5.52 | 5.58 | 5.77 | 6.47 | 6.58 |
| MINIMUM | 0.55 | 0.67 | 0.81 | 0.76 | 0.53 | 0.43 | 0.50 | 0.76 |
| MAXIMUM | 26.83 | 27.38 | 27.38 | 28.72 | 29.05 | 28.51 | 29.43 | 29.26 |
| RANGE | 26.28 | 26.71 | 26.57 | 27.96 | 28.52 | 28.08 | 28.93 | 28.50 |
| MAX/MIN | 48.78 | 40.87 | 33.80 | 37.79 | 54.81 | 66.30 | 58.86 | 38.50 |
| STANDARD DEVIATION | 6.09 | 6.16 | 6.42 | 6.40 | 6.42 | 6.29 | 6.51 | 6.73 |
| COEFF. OF VAR. | 1.24 | 1.19 | 1.09 | 1.16 | 1.15 | 1.09 | 1.01 | 1.02 |

Note: See note to Table 8.

TABLE 10 LOCAL REVENUE RECEIPTS AS A PERCENTAGE OF TOTAL REVENUE RECEIPTS

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| CAESAR RODNEY | 12.05 | 10.56 | 9.60 | 8.79 | 8.75 | 8.44 | 7.77 | 7.41 |
| LAKE FOREST | 14.09 | 13.64 | 14.55 | 13.92 | 13.48 | 12.64 | 11.91 | 12.34 |
| DE LA WARR | 20.30 | 19.42 | 17.92 | 17.54 | 21.77 | 21.31 | 21.21 | 19.31 |
| MILFORD | 16.31 | 13.93 | 12.65 | 11.72 | 12.07 | 11.96 | 11.16 | 11.33 |
| LAUREL | 12.76 | 16.92 | 16.51 | 8.83 | 11.16 | 11.62 | 12.22 | 10.12 |
| SMYRNA | 20.93 | 18.56 | 15.41 | 16.02 | 15.45 | 14.54 | 14.72 | 14.86 |
| WOODBRIDGE | 11.89 | 11.49 | 12.37 | 11.63 | 11.43 | 9.97 | 9.89 | 9.19 |
| NC-GUNNING BEDFORD | 28.09 | 28.38 | 27.55 | 41.52 | 28.21 | 28.13 | 26.26 | 25.38 |
| NEWARK | 27.60 | 27.93 | 29.54 | 27.83 | 29.66 | 29.45 | 30.22 | 31.04 |
| DELMAR | 13.82 | 13.04 | 14.72 | 13.44 | 17.95 | 15.18 | 15.10 | 13.43 |
| APPOQUINIMINK | 14.59 | 13.71 | 15.81 | 15.82 | 19.50 | 19.36 | 17.85 | 17.20 |
| STANTON | 29.44 | 28.96 | 27.89 | 26.57 | 26.77 | 28.68 | 30.47 | 29.86 |
| SEAFORD | 13.96 | 14.10 | 15.25 | 15.88 | 16.29 | 15.98 | 13.70 | 13.85 |
| CONRAD | 25.85 | 23.35 | 24.96 | 22.42 | 23.69 | 25.00 | 22.80 | 23.82 |
| CLAYMONT | 28.06 | 28.50 | 28.80 | 26.62 | 27.55 | 30.05 | 27.47 | 29.23 |
| WILMINGTON | 23.67 | 27.76 | 30.19 | 34.33 | 34.69 | 35.27 | 31.70 | 31.54 |
| CAPITAL | 21.48 | 20.96 | 20.36 | 21.93 | 20.17 | 21.18 | 21.03 | 21.12 |
| MARSHALLTON-MCKEAN | 32.80 | 31.23 | 33.42 | 29.80 | 29.42 | 29.94 | 27.83 | 29.30 |
| ALFRED I DUPONT | 31.05 | 33.15 | 33.57 | 31.87 | 33.35 | 35.50 | 34.27 | 33.78 |
| MOUNT PLEASANT | 33.55 | 32.28 | 35.11 | 33.35 | 33.75 | 34.47 | 33.59 | 33.09 |
| INDIAN RIVER | 16.09 | 15.37 | 15.70 | 14.78 | 16.41 | 16.68 | 15.88 | 15.75 |
| CAPE HENLOPEN | 26.31 | 26.27 | 27.43 | 27.38 | 28.73 | 34.09 | 28.95 | 32.07 |
| ALEXIS I DUPONT | 42.67 | 44.79 | 43.28 | 41.11 | 43.61 | 43.74 | 41.16 | 39.62 |

STATISTICS FOR TABLE 10

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| MEAN | 22.49 | 22.36 | 22.72 | 22.31 | 22.78 | 23.18 | 22.05 | 21.94 |
| MINIMUM | 11.89 | 10.56 | 9.60 | 8.79 | 8.75 | 8.44 | 7.77 | 7.41 |
| MAXIMUM | 42.67 | 44.79 | 43.28 | 41.11 | 43.61 | 43.74 | 41.16 | 39.62 |
| RANGE | 30.78 | 34.23 | 33.68 | 32.32 | 34.86 | 35.30 | 33.39 | 32.21 |
| MAX/MIN | 3.59 | 4.24 | 4.51 | 4.68 | 4.98 | 5.18 | 5.30 | 5.35 |
| STANDARD DEVIATION | 8.41 | 8.86 | 9.07 | 9.94 | 9.15 | 9.94 | 9.31 | 9.57 |
| COEFF. OF VAR. | 0.37 | 0.40 | 0.40 | 0.45 | 0.40 | 0.43 | 0.42 | 0.44 |

Note: See note to Table 8.

TABLE 11 STATE APPROPRIATIONS FOR SALARIES (DIVISION 1) PER STUDENT

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| CAESAR RODNEY | 305.07 | 349.73 | 366.69 | 449.61 | 448.11 | 492.00 | 516.45 | 565.25 |
| LAKE FOREST | 426.80 | 480.77 | 471.90 | 535.44 | 555.76 | 611.28 | 655.32 | 701.72 |
| DE LA WARR | 477.90 | 531.63 | 560.19 | 614.84 | 690.44 | 754.26 | 830.22 | 963.47 |
| MILFORD | 434.37 | 488.87 | 508.51 | 553.16 | 574.98 | 622.03 | 651.00 | 708.27 |
| LAUREL | 436.81 | 505.28 | 497.01 | 589.29 | 621.73 | 652.21 | 695.85 | 731.25 |
| SMYRNA | 448.98 | 505.07 | 496.40 | 563.17 | 584.10 | 619.46 | 686.52 | 730.10 |
| WOODBRIDGE | 414.75 | 469.16 | 461.49 | 516.64 | 528.29 | 582.78 | 585.68 | 660.59 |
| NC-GUNNING BEDFORD | 434.38 | 484.14 | 485.58 | 562.15 | 580.69 | 621.59 | 669.83 | 731.79 |
| NEWARK | 432.78 | 483.58 | 507.75 | 570.18 | 597.55 | 633.10 | 679.55 | 715.65 |
| DELMAR | 512.79 | 580.79 | 577.63 | 627.15 | 712.34 | 763.74 | 752.58 | 786.44 |
| APPOQUINIMINK | 450.58 | 545.70 | 578.26 | 635.39 | 643.12 | 675.90 | 755.47 | 821.04 |
| STANTON | 464.36 | 526.12 | 554.74 | 628.15 | 650.49 | 702.31 | 763.31 | 853.82 |
| SEAFORD | 473.75 | 517.94 | 524.28 | 569.83 | 577.49 | 632.19 | 658.59 | 734.34 |
| CONRAD | 426.24 | 481.37 | 497.99 | 565.09 | 590.51 | 650.67 | 720.62 | 817.48 |
| CLAYMONT | 439.77 | 485.69 | 502.72 | 571.35 | 603.22 | 646.17 | 720.78 | 792.10 |
| WILMINGTON | 501.31 | 542.84 | 561.11 | 609.91 | 631.67 | 688.37 | 703.22 | 826.80 |
| CAPITAL | 439.51 | 496.23 | 500.31 | 559.74 | 588.24 | 636.12 | 671.08 | 730.52 |
| MARSHALLTON-MCKEAN | 440.34 | 499.91 | 518.21 | 598.07 | 632.63 | 695.43 | 748.61 | 825.73 |
| ALFRED I DUPONT | 485.79 | 548.33 | 523.00 | 599.64 | 624.05 | 656.70 | 750.35 | 821.70 |
| MOUNT PLEASANT | 460.32 | 514.33 | 534.65 | 600.14 | 627.48 | 664.84 | 743.53 | 812.59 |
| INDIAN RIVER | 423.10 | 469.35 | 477.28 | 551.98 | 576.50 | 625.15 | 662.28 | 708.39 |
| CAPE HENLOPEN | 446.13 | 501.49 | 513.82 | 575.40 | 573.73 | 609.07 | 649.81 | 732.50 |
| ALEXIS I DUPONT | 481.70 | 544.01 | 565.02 | 621.31 | 645.39 | 693.98 | 772.10 | 834.76 |

STATISTICS FOR TABLE 11

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| MEAN | 445.98 | 502.28 | 512.37 | 576.85 | 602.54 | 649.10 | 697.51 | 765.49 |
| MINIMUM | 305.07 | 349.73 | 366.69 | 449.61 | 448.11 | 492.00 | 516.45 | 565.25 |
| MAXIMUM | 512.79 | 580.79 | 578.26 | 635.39 | 712.34 | 763.74 | 830.22 | 963.47 |
| RANGE | 207.72 | 231.06 | 211.57 | 185.78 | 264.23 | 271.74 | 313.77 | 398.22 |
| MAX/MIN | 1.68 | 1.66 | 1.58 | 1.41 | 1.59 | 1.55 | 1.61 | 1.70 |
| STANDARD DEVIATION | 40.17 | 44.17 | 46.21 | 41.80 | 54.11 | 56.22 | 66.98 | 80.49 |
| COEFF. OF VAR. | 0.09 | 0.09 | 0.09 | 0.07 | 0.09 | 0.09 | 0.10 | 0.11 |
| SIMPLE CORR(FULL VAL<br>(SIGNIFICANCE LEVEL) | 0.427<br>(.021) | 0.379<br>(.037) | 0.383<br>(.036) | 0.345<br>(.053) | 0.253<br>(.122) | 0.231<br>(.144) | 0.290<br>(.089) | 0.325<br>(.065) |
| BETA (FULL VALUE)<br>STANDARD ERROR | 0.2036<br>0.0940 | 0.1986<br>0.1060 | 0.2046<br>0.1078 | 0.1720<br>0.1019 | 0.1447<br>0.1203 | 0.1309<br>0.1198 | 0.1807<br>0.1299 | 0.2187<br>0.1387 |

Note: State appropriations for Division I divided by total enrollment (Source: Report of Educational Statistics).

TABLE 12 DIVISION 1 APPROPRIATIONS PER STUDENT -- ADJUSTED FOR PRICE CHANGES

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| CAESAR RODNEY | 349.05 | 372.05 | 366.69 | 419.02 | 391.02 | 396.14 | 385.70 | 400.89 |
| LAKE FOREST | 488.33 | 511.46 | 471.90 | 499.02 | 484.96 | 492.17 | 489.41 | 497.68 |
| DE LA WARR | 546.80 | 565.57 | 560.19 | 573.01 | 602.48 | 607.29 | 620.03 | 683.31 |
| MILFORD | 496.99 | 520.07 | 508.51 | 515.53 | 501.73 | 500.83 | 486.18 | 502.32 |
| LAUREL | 499.78 | 537.54 | 497.01 | 549.20 | 542.53 | 525.12 | 519.68 | 518.62 |
| SMYRNA | 513.71 | 537.31 | 496.40 | 524.85 | 509.69 | 498.76 | 512.71 | 517.80 |
| WOODBRIDGE | 474.54 | 499.11 | 461.49 | 481.49 | 460.99 | 469.23 | 437.40 | 468.50 |
| NC-GUNNING BEDFORD | 497.00 | 515.04 | 485.58 | 523.91 | 506.71 | 500.48 | 500.24 | 519.00 |
| NEWARK | 495.18 | 514.45 | 507.75 | 531.39 | 521.43 | 509.74 | 507.51 | 507.55 |
| DELMAR | 586.72 | 617.87 | 577.63 | 584.48 | 621.59 | 614.92 | 562.04 | 557.76 |
| APPOQUINIMINK | 515.54 | 580.53 | 578.26 | 592.16 | 561.18 | 544.20 | 564.20 | 582.30 |
| STANTON | 531.31 | 559.70 | 554.74 | 585.41 | 567.62 | 565.47 | 570.06 | 605.55 |
| SEAFORD | 542.05 | 551.00 | 524.28 | 531.06 | 503.91 | 509.01 | 491.85 | 520.81 |
| CONRAD | 487.69 | 512.10 | 497.99 | 526.64 | 515.28 | 523.89 | 538.18 | 579.77 |
| CLAYMONT | 503.17 | 516.70 | 502.72 | 532.48 | 526.37 | 520.27 | 538.30 | 561.77 |
| WILMINGTON | 573.58 | 577.49 | 561.11 | 568.41 | 551.19 | 554.24 | 525.18 | 586.38 |
| CAPITAL | 502.87 | 527.91 | 500.31 | 521.66 | 513.30 | 512.18 | 501.18 | 518.10 |
| MARSHALLTON-MCKEAN | 503.82 | 531.82 | 518.21 | 557.38 | 552.03 | 559.93 | 559.09 | 585.62 |
| ALFRED I DUPONT | 555.82 | 583.33 | 523.00 | 558.84 | 544.55 | 528.74 | 560.38 | 582.77 |
| MOUNT PLEASANT | 526.68 | 547.16 | 534.65 | 559.31 | 547.54 | 535.30 | 555.29 | 576.31 |
| INDIAN RIVER | 484.10 | 499.31 | 477.28 | 514.43 | 503.06 | 503.34 | 494.61 | 502.40 |
| CAPE HENLOPEN | 510.44 | 533.50 | 513.82 | 536.26 | 500.63 | 490.39 | 485.30 | 519.50 |
| ALEXIS I DUPONT | 551.15 | 578.74 | 565.02 | 579.04 | 563.17 | 558.76 | 576.63 | 592.03 |

STATISTICS FOR TABLE 12

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| MEAN | 510.27 | 534.34 | 512.37 | 537.60 | 525.78 | 522.62 | 520.92 | 542.90 |
| MINIMUM | 349.05 | 372.05 | 366.69 | 419.02 | 391.02 | 396.14 | 385.70 | 400.89 |
| MAXIMUM | 586.72 | 617.86 | 578.26 | 592.16 | 621.59 | 614.93 | 620.03 | 683.31 |
| RANGE | 237.67 | 245.81 | 211.57 | 173.14 | 230.57 | 218.79 | 234.33 | 282.43 |
| MAX/MIN | 1.68 | 1.66 | 1.58 | 1.41 | 1.59 | 1.55 | 1.61 | 1.70 |
| STANDARD DEVIATION | 45.96 | 46.99 | 46.21 | 38.96 | 47.22 | 45.27 | 50.02 | 57.09 |
| COEFF. OF VAR. | 0.09 | 0.09 | 0.09 | 0.07 | 0.09 | 0.09 | 0.10 | 0.11 |
| SIMPLE CORR(FULL VAL<br>(SIGNIFICANCE LEVEL) | 0.427<br>(.021) | 0.379<br>(.037) | 0.383<br>(.036) | 0.345<br>(.053) | 0.253<br>(.122) | 0.231<br>(.144) | 0.290<br>(.089) | 0.325<br>(.065) |
| BETA (FULL VALUE)<br>STANDARD ERROR | 0.1779<br>0.0718 | 0.1867<br>0.0937 | 0.2046<br>0.1078 | 0.1846<br>0.1173 | 0.1658<br>0.1580 | 0.1626<br>0.1848 | 0.2420<br>0.2329 | 0.3084<br>0.2757 |

Note: Division I appropriations deflated by the State and local government component of the GNP deflator (Source: Economic Report of the President, 1978, Table B-3 p. 261).

TABLE 13 STATE APPROPRIATIONS FOR OTHER COSTS (DIVISION 2) PER STUDENT

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| CAESAR RODNEY | 34.28 | 35.64 | 43.77 | 45.37 | 57.70 | 61.87 | 90.81 | 89.20 |
| LAKE FOREST | 45.50 | 45.59 | 54.29 | 56.48 | 68.72 | 75.77 | 96.32 | 98.48 |
| DE LA WARR | 51.41 | 54.20 | 65.27 | 67.92 | 75.25 | 98.84 | 146.19 | 168.06 |
| MILFORD | 47.93 | 49.32 | 58.48 | 56.06 | 68.84 | 75.19 | 110.54 | 109.51 |
| LAUREL | 48.59 | 47.46 | 57.47 | 58.39 | 71.38 | 71.56 | 109.55 | 103.64 |
| SMYRNA | 52.63 | 51.00 | 53.70 | 51.01 | 69.42 | 73.85 | 107.78 | 111.25 |
| WOODBRIDGE | 46.69 | 46.61 | 50.77 | 54.36 | 64.35 | 68.04 | 100.78 | 103.94 |
| NC-GUNNING BEDFORD | 47.70 | 48.57 | 54.77 | 60.10 | 71.68 | 76.53 | 111.26 | 111.21 |
| NEWARK | 47.17 | 48.78 | 47.55 | 59.45 | 71.59 | 76.56 | 106.94 | 106.57 |
| DELMAR | 51.95 | 67.42 | 73.79 | 79.75 | 95.20 | 100.31 | 154.70 | 138.26 |
| APPOQUINIMINK | 50.66 | 56.73 | 61.69 | 65.76 | 79.71 | 88.67 | 129.35 | 128.46 |
| STANTON | 49.27 | 51.38 | 49.12 | 61.59 | 78.10 | 83.19 | 112.09 | 116.99 |
| SEAFORD | 49.05 | 49.82 | 60.11 | 53.45 | 64.58 | 71.60 | 104.79 | 108.01 |
| CONRAD | 46.82 | 47.49 | 54.84 | 61.74 | 74.38 | 84.00 | 117.42 | 116.72 |
| CLAYMONT | 46.36 | 46.91 | 50.29 | 58.53 | 71.22 | 75.85 | 112.48 | 115.24 |
| WILMINGTON | 52.86 | 51.17 | 58.84 | 57.99 | 71.11 | 76.48 | 131.83 | 120.64 |
| CAPITAL | 46.28 | 47.18 | 53.53 | 52.01 | 63.27 | 65.64 | 100.93 | 94.90 |
| MARSHALLTON-MCKEAN | 46.56 | 48.44 | 55.06 | 57.36 | 75.31 | 85.23 | 126.22 | 125.97 |
| ALFRED I DUPONT | 50.56 | 50.76 | 59.48 | 57.46 | 70.10 | 73.74 | 112.56 | 110.66 |
| MOUNT PLEASANT | 46.66 | 51.48 | 48.65 | 59.99 | 74.11 | 79.54 | 106.91 | 111.46 |
| INDIAN RIVER | 46.83 | 46.41 | 47.94 | 57.73 | 70.78 | 75.36 | 108.89 | 106.86 |
| CAPE HENLOPEN | 45.87 | 46.63 | 49.96 | 54.78 | 65.75 | 69.67 | 101.39 | 99.89 |
| ALEXIS I DUPONT | 47.02 | 49.38 | 52.71 | 56.53 | 71.11 | 74.82 | 108.28 | 113.77 |

STATISTICS FOR TABLE 13

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| MEAN | 47.77 | 49.50 | 54.87 | 58.43 | 71.46 | 77.49 | 113.39 | 113.46 |
| MINIMUM | 34.28 | 35.64 | 43.77 | 45.37 | 57.70 | 61.87 | 90.81 | 89.20 |
| MAXIMUM | 52.86 | 55.35 | 73.78 | 79.75 | 95.20 | 100.31 | 154.70 | 168.06 |
| RANGE | 18.58 | 19.71 | 30.01 | 34.38 | 37.50 | 38.44 | 63.89 | 78.86 |
| MAX/MIN | 1.54 | 1.55 | 1.69 | 1.76 | 1.65 | 1.62 | 1.70 | 1.88 |
| STANDARD DEVIATION | 3.71 | 5.50 | 6.62 | 6.61 | 7.16 | 9.29 | 15.20 | 16.16 |
| COEFF. OF VAR. | 0.08 | 0.11 | 0.12 | 0.11 | 0.10 | 0.12 | 0.13 | 0.14 |
| SIMPLE CORR(FULL VAL<br>(SIGNIFICANCE LEVEL) | 0.137<br>(.267) | 0.101<br>(.323) | -0.082<br>(.354) | -0.039<br>(.429) | 0.003<br>(.496) | -0.094<br>(.334) | -0.074<br>(.368) | -0.054<br>(.403) |
| BETA (FULL VALUE)<br>STANDARD ERROR | 0.0060<br>0.0095 | 0.0067<br>0.0142 | -0.0063<br>0.0167 | -0.0031<br>0 0172 | 0.0002<br>0.0165 | -0.0087<br>0.0203 | -0.0103<br>0.0307 | -0.0073<br>0.0294 |

Note: Division II aid consists of aid for purposes (other than employee salaries) other than debt service and transportation (Source: Report of Educational Statistics).

TABLE 14 DIVISION 2 APPROPRIATIONS PER STUDENT -- ADJUSTED FOR PRICE CHANGES

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| CAESAR RODNEY | 39.23 | 37.92 | 43.77 | 42.28 | 50.35 | 49.82 | 67.82 | 63.26 |
| LAKE FOREST | 52.06 | 48.50 | 54.29 | 52.64 | 59.97 | 61.01 | 71.93 | 69.84 |
| DE LA WARR | 58.82 | 57.66 | 65.27 | 63.30 | 65.67 | 79.58 | 109.18 | 119.19 |
| MILFORD | 54.84 | 52.47 | 58.48 | 52.24 | 60.07 | 60.54 | 82.56 | 77.67 |
| LAUREL | 55.59 | 50.49 | 57.47 | 54.41 | 62.29 | 57.62 | 81.81 | 73.50 |
| SMYRNA | 60.21 | 54.25 | 53.70 | 47.54 | 60.58 | 59.46 | 80.49 | 78.90 |
| WOODBRIDGE | 53.42 | 49.59 | 50.77 | 50.67 | 56.15 | 54.78 | 75.26 | 73.72 |
| NC-GUNNING BEDFORD | 54.58 | 51.67 | 54.77 | 56.01 | 62.55 | 61.62 | 83.09 | 78.87 |
| NEWARK | 53.97 | 51.90 | 47.55 | 55.40 | 62.47 | 61.64 | 79.86 | 75.58 |
| DELMAR | 59.44 | 71.72 | 73.79 | 74.32 | 83.08 | 80.77 | 115.53 | 98.06 |
| APPOQUINIMINK | 57.97 | 60.35 | 61.69 | 61.28 | 69.55 | 71.40 | 96.60 | 91.11 |
| STANTON | 56.37 | 54.65 | 49.12 | 57.40 | 68.15 | 66.98 | 83.71 | 82.97 |
| SEAFORD | 56.12 | 53.00 | 60.11 | 49.82 | 56.35 | 57.65 | 78.26 | 76.60 |
| CONRAD | 53.57 | 50.52 | 54.84 | 57.54 | 64.90 | 67.63 | 87.69 | 82.78 |
| CLAYMONT | 53.04 | 49.91 | 50.29 | 54.55 | 62.15 | 61.07 | 84.00 | 81.73 |
| WILMINGTON | 60.48 | 54.43 | 58.84 | 54.05 | 62.05 | 61.58 | 98.46 | 85.56 |
| CAPITAL | 52.95 | 50.19 | 53.53 | 48.47 | 55.21 | 52.85 | 75.37 | 67.30 |
| MARSHALLTON-MCKEAN | 53.27 | 51.53 | 55.06 | 53.46 | 65.72 | 68.62 | 94.27 | 89.34 |
| ALFRED I DUPONT | 57.85 | 54.00 | 59.48 | 53.55 | 61.17 | 59.37 | 84.06 | 78.48 |
| MOUNT PLEASANT | 53.39 | 54.76 | 48.65 | 55.91 | 64.67 | 64.04 | 79.84 | 79.05 |
| INDIAN RIVER | 53.58 | 49.38 | 47.94 | 53.80 | 61.76 | 60.68 | 81.32 | 75.78 |
| CAPE HENLOPEN | 52.48 | 49.61 | 49.96 | 51.06 | 57.38 | 56.09 | 75.72 | 70.85 |
| ALEXIS I DUPONT | 53.80 | 52.53 | 52.71 | 52.69 | 62.05 | 60.24 | 80.87 | 80.69 |

STATISTICS FOR TABLE 14

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| MEAN | 54.66 | 52.66 | 54.87 | 54.45 | 62.36 | 62.39 | 84.68 | 80.47 |
| MINIMUM | 39.22 | 37.91 | 43.77 | 42.28 | 50.35 | 49.81 | 67.82 | 63.26 |
| MAXIMUM | 60.48 | 58.88 | 73.78 | 74.32 | 83.07 | 80.76 | 115.53 | 119.19 |
| RANGE | 21.26 | 20.97 | 30.01 | 32.04 | 32.72 | 30.95 | 47.71 | 55.93 |
| MAX/MIN | 1.54 | 1.55 | 1.69 | 1.76 | 1.65 | 1.62 | 1.70 | 1.88 |
| STANDARD DEVIATION | 4.24 | 5.85 | 6.62 | 6.16 | 6.25 | 7.48 | 11.35 | 11.46 |
| COEFF. OF VAR. | 0.08 | 0.11 | 0.12 | 0.11 | 0.10 | 0.12 | 0.13 | 0.14 |
| SIMPLE CORR(FULL VAL<br>(SIGNIFICANCE LEVEL) | 0.137<br>(.267) | 0.101<br>(.323) | -0.082<br>(.354) | -0.039<br>(.429) | 0.003<br>(.496) | -0.094<br>(.334) | -0.074<br>(.368) | -0.054<br>(.403) |
| BETA (FULL VALUE)<br>STANDARD ERROR | 0.0052<br>0.0073 | 0.0063<br>0.0125 | -0.0063<br>0.0167 | -0.0033<br>0.0198 | 0.0002<br>0.0217 | -0.0108<br>0.0313 | -0.0138<br>0.0550 | -0.0103<br>0.0585 |

Note: Deflated by the State and local government component of the GNP deflator (Source: Economic Repor of the President, 1978, Table B-3, p. 261).

TABLE 15 STATE APPROPRIATIONS FOR EQUALIZATION (DIVISION 3) PER STUDENT

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| CAESAR RODNEY | 8.36 | 17.02 | 21.21 | 37.19 | 36.91 | 40.31 | 41.24 | 43.04 |
| LAKE FOREST | 10.83 | 21.69 | 24.51 | 35.33 | 38.83 | 49.42 | 50.86 | 51.46 |
| DE LA WARR | 13.15 | 30.79 | 30.37 | 60.42 | 52.41 | 53.81 | 53.94 | 61.49 |
| MILFORD | 10.45 | 21.36 | 24.72 | 33.99 | 34.48 | 43.91 | 44.98 | 46.60 |
| LAUREL | 10.89 | 22.32 | 25.01 | 35.82 | 39.50 | 47.20 | 49.15 | 50.13 |
| SMYRNA | 9.63 | 19.06 | 21.17 | 27.65 | 32.89 | 43.45 | 47.86 | 45.47 |
| WOODBRIDGE | 11.38 | 22.60 | 25.64 | 43.90 | 44.61 | 44.59 | 44.04 | 46.57 |
| NC-GUNNING BEDFORD | 9.51 | 18.88 | 22.18 | 29.82 | 32.87 | 41.99 | 40.60 | 41.06 |
| NEWARK | 10.53 | 20.91 | 23.99 | 33.82 | 32.92 | 41.95 | 41.36 | 41.28 |
| DELMAR | 9.00 | 18.67 | 22.86 | 27.51 | 29.29 | 35.56 | 47.89 | 50.25 |
| APPOQUINIMINK | 12.50 | 26.51 | 30.14 | 51.15 | 50.48 | 53.67 | 56.51 | 53.24 |
| STANTON | 12.02 | 24.11 | 26.61 | 37.24 | 38.56 | 44.34 | 44.42 | 43.54 |
| SEAFORD | 10.65 | 17.98 | 23.51 | 26.53 | 28.05 | 39.19 | 41.49 | 43.77 |
| CONRAD | 9.18 | 19.95 | 23.32 | 33.45 | 34.63 | 40.36 | 41.24 | 44.47 |
| CLAYMONT | 9.38 | 18.76 | 21.29 | 22.82 | 28.32 | 37.16 | 39.64 | 39.85 |
| WILMINGTON | 7.45 | 13.34 | 15.69 | 17.70 | 20.26 | 27.01 | 28.91 | 30.98 |
| CAPITAL | 7.05 | 14.66 | 16.83 | 19.85 | 20.14 | 29.18 | 30.58 | 30.74 |
| MARSHALLTON-MCKEAN | 9.90 | 20.33 | 23.18 | 32.08 | 33.82 | 39.28 | 38.98 | 39.91 |
| ALFRED I DUPONT | 8.16 | 16.56 | 18.32 | 23.36 | 24.82 | 33.26 | 32.76 | 32.68 |
| MOUNT PLEASANT | 6.49 | 14.45 | 16.34 | 17.34 | 18.98 | 25.17 | 24.11 | 23.62 |
| INDIAN RIVER | 7.81 | 15.10 | 16.12 | 20.29 | 20.73 | 21.81 | 25.34 | 24.17 |
| CAPE HENLOPEN | 4.64 | 8.50 | 9.18 | 10.14 | 9.94 | 12.76 | 9.80 | 9.42 |
| ALEXIS I DUPONT | 1.77 | 3.57 | 4.16 | 4.42 | 5.11 | 7.07 | 7.37 | 7.67 |

STATISTICS FOR TABLE 15

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| MEAN | 9.16 | 18.57 | 21.15 | 29.64 | 30.81 | 37.06 | 38.39 | 39.19 |
| MINIMUM | 1.77 | 3.57 | 4.16 | 4.42 | 5.11 | 7.07 | 7.37 | 7.67 |
| MAXIMUM | 13.15 | 30.79 | 30.37 | 60.42 | 52.41 | 53.81 | 56.51 | 61.49 |
| RANGE | 11.38 | 27.22 | 26.21 | 56.00 | 47.30 | 46.74 | 49.14 | 53.82 |
| MAX/MIN | 7.43 | 8.62 | 7.30 | 13.67 | 10.26 | 7.61 | 7.67 | 8.02 |
| STANDARD DEVIATION | 2.57 | 5.67 | 6.10 | 12.53 | 11.57 | 11.93 | 12.63 | 13.24 |
| COEFF. OF VAR. | 0.28 | 0.31 | 0.29 | 0.42 | 0.38 | 0.32 | 0.33 | 0.34 |
| SIMPLE CORR(FULL VAL<br>(SIGNIFICANCE LEVEL) | -0.888<br>(.001) | -0.873<br>(.001) | -0.905<br>(.001) | -0.847<br>(.001) | -0.888<br>(.001) | -0.929<br>(.001) | -0.930<br>(.001) | -0.919<br>(.001) |
| BETA (FULL VALUE)<br>STANDARD ERROR | -0.0271<br>0.0031 | -0.0588<br>0.0072 | -0.0639<br>0.0066 | -0.1262<br>0.0173 | -0.1083<br>0.0122 | -0.1112<br>0.0097 | -0.1090<br>0.0094 | -0.1955<br>0.0001 |

Note: (Source: Report of Educational Statistics)

TABLE 16 DIVISION 3 APPROPRIATIONS PER STUDENT -- ADJUSTED FOR PRICE CHANGES

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| CAESAR RODNEY | 9.57 | 18.10 | 21.21 | 34.66 | 32.21 | 32.46 | 30.80 | 30.52 |
| LAKE FOREST | 12.39 | 23.08 | 24.51 | 32.92 | 33.88 | 39.79 | 37.98 | 36.50 |
| DE LA WARR | 15.05 | 32.76 | 30.37 | 56.31 | 45.73 | 43.33 | 40.29 | 43.61 |
| MILFORD | 11.96 | 22.72 | 24.72 | 31.68 | 30.09 | 35.35 | 33.59 | 33.05 |
| LAUREL | 12.46 | 23.74 | 25.01 | 33.38 | 34.47 | 38.00 | 36.70 | 35.55 |
| SMYRNA | 11.02 | 20.28 | 21.17 | 25.77 | 28.70 | 34.98 | 35.74 | 32.25 |
| WOODBRIDGE | 13.02 | 24.04 | 25.64 | 40.91 | 38.93 | 35.90 | 32.89 | 33.03 |
| NC-GUNNING BEDFORD | 10.88 | 20.08 | 22.18 | 27.79 | 28.69 | 33.81 | 30.32 | 29.12 |
| NEWARK | 12.05 | 22.25 | 23.99 | 31.52 | 28.72 | 33.78 | 30.89 | 29.28 |
| DELMAR | 10.30 | 19.86 | 22.86 | 25.64 | 25.56 | 28.63 | 35.76 | 35.64 |
| APPOQUINIMINK | 14.30 | 28.20 | 30.14 | 47.67 | 44.04 | 43.21 | 42.20 | 37.76 |
| STANTON | 13.75 | 25.65 | 26.61 | 34.71 | 33.65 | 35.70 | 33.18 | 30.88 |
| SEAFORD | 12.19 | 19.12 | 23.51 | 24.72 | 24.48 | 31.55 | 30.99 | 31.04 |
| CONRAD | 10.50 | 21.23 | 23.32 | 31.17 | 30.22 | 32.50 | 30.80 | 31.54 |
| CLAYMONT | 10.73 | 19.96 | 21.29 | 21.27 | 24.71 | 29.92 | 29.60 | 28.27 |
| WILMINGTON | 8.52 | 14.19 | 15.69 | 16.50 | 17.68 | 21.75 | 21.59 | 21.97 |
| CAPITAL | 8.07 | 15.59 | 16.83 | 18.50 | 17.57 | 23.50 | 22.83 | 21.80 |
| MARSHALLTON-MCKEAN | 11.33 | 21.63 | 23.18 | 29.90 | 29.51 | 31.62 | 29.11 | 28.30 |
| ALFRED I DUPONT | 9.34 | 17.62 | 18.32 | 21.77 | 21.66 | 26.78 | 24.47 | 23.18 |
| MOUNT PLEASANT | 7.42 | 15.37 | 16.34 | 16.16 | 16.56 | 20.27 | 18.01 | 16.75 |
| INDIAN RIVER | 8.94 | 16.06 | 16.12 | 18.91 | 18.09 | 17.56 | 18.92 | 17.14 |
| CAPE HENLOPEN | 5.31 | 9.04 | 9.18 | 9.45 | 8.68 | 10.27 | 7.32 | 6.68 |
| ALEXIS I DUPONT | 2.03 | 3.80 | 4.16 | 4.12 | 4.46 | 5.69 | 5.50 | 5.44 |

STATISTICS FOR TABLE 16

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| MEAN | 10.48 | 19.76 | 21.15 | 27.62 | 26.88 | 29.84 | 28.67 | 27.79 |
| MINIMUM | 2.03 | 3.80 | 4.16 | 4.12 | 4.46 | 5.69 | 5.50 | 5.44 |
| MAXIMUM | 15.05 | 32.76 | 30.37 | 56.31 | 45.73 | 43.33 | 42.20 | 43.61 |
| RANGE | 13.02 | 28.96 | 26.21 | 52.19 | 41.27 | 37.63 | 36.70 | 38.17 |
| MAX/MIN | 7.43 | 8.62 | 7.30 | 13.67 | 10.26 | 7.61 | 7.67 | 8.02 |
| STANDARD DEVIATION | 2.94 | 6.03 | 6.10 | 11.68 | 10.10 | 9.61 | 9.43 | 9.39 |
| COEFF. OF VAR. | 0.28 | 0.31 | 0.29 | 0.42 | 0.38 | 0.32 | 0.33 | 0.34 |
| SIMPLE CORR(FULL VAL<br>(SIGNIFICANCE LEVEL) | -0.888<br>(.001) | -0.873<br>(.001) | -0.905<br>(.001) | -0.847<br>(.001) | -0.888<br>(.001) | -0.929<br>(.001) | -0.930<br>(.001) | -0.919<br>(.001) |
| BETA (FULL VALUE)<br>STANDARD ERROR | -0.0237<br>0.0024 | -0.0553<br>0.0064 | -0.0639<br>0.0066 | -0.1354<br>0.0199 | -0.1241<br>0.0160 | -0.1381<br>0.0150 | -0.1460<br>0.0169 | -0.2757<br>0.0302 |

Note: Deflated by the State and local government component of the GNP deflator (Source: Economic Repor of the President, 1978, Table B-3, p. 261).

TABLE 17 DIVISIONS 1 + 2 + 3 PER STUDENT

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| CAESAR RODNEY | 347.71 | 402.39 | 431.68 | 532.16 | 542.73 | 594.19 | 648.49 | 697.49 |
| LAKE FOREST | 483.13 | 548.05 | 550.70 | 627.25 | 663.31 | 736.46 | 802.50 | 851.66 |
| DE LA WARR | 542.46 | 616.63 | 655.83 | 743.18 | 818.11 | 906.91 | 1030.35 | 1193.02 |
| MILFORD | 492.75 | 559.55 | 591.71 | 643.21 | 678.31 | 741.12 | 806.52 | 864.38 |
| LAUREL | 496.29 | 575.07 | 579.49 | 683.50 | 732.62 | 770.97 | 854.55 | 885.01 |
| SMYRNA | 511.24 | 575.13 | 571.27 | 641.84 | 686.41 | 736.76 | 842.15 | 886.83 |
| WOODBRIDGE | 472.82 | 538.37 | 537.90 | 614.89 | 637.25 | 695.41 | 730.50 | 811.10 |
| NC-GUNNING BEDFORD | 491.60 | 551.58 | 562.52 | 652.07 | 685.25 | 740.11 | 821.68 | 884.06 |
| NEWARK | 490.48 | 553.27 | 579.29 | 663.44 | 702.06 | 751.62 | 827.85 | 863.50 |
| DELMAR | 573.75 | 666.88 | 674.27 | 734.40 | 836.83 | 899.61 | 955.16 | 974.95 |
| APPOQUINIMINK | 513.74 | 628.94 | 670.10 | 752.29 | 773.30 | 818.25 | 941.32 | 1002.74 |
| STANTON | 525.65 | 601.61 | 630.48 | 726.98 | 767.15 | 829.85 | 919.82 | 1014.35 |
| SEAFORD | 533.46 | 585.74 | 607.90 | 649.80 | 670.12 | 742.99 | 804.87 | 886.12 |
| CONRAD | 482.24 | 548.82 | 576.14 | 660.28 | 699.52 | 775.03 | 879.28 | 978.67 |
| CLAYMONT | 495.51 | 551.37 | 574.31 | 652.70 | 702.76 | 759.17 | 872.90 | 947.19 |
| WILMINGTON | 561.63 | 607.35 | 635.64 | 685.60 | 723.04 | 791.86 | 863.96 | 978.42 |
| CAPITAL | 492.84 | 558.07 | 570.67 | 631.61 | 671.65 | 730.94 | 802.58 | 856.16 |
| MARSHALLTON-MCKEAN | 496.80 | 568.68 | 596.44 | 687.52 | 741.77 | 819.94 | 913.82 | 991.60 |
| ALFRED I DUPONT | 544.51 | 615.65 | 600.80 | 680.46 | 718.98 | 763.70 | 895.68 | 965.04 |
| MOUNT PLEASANT | 513.47 | 580.25 | 599.65 | 677.47 | 720.57 | 769.55 | 874.55 | 947.68 |
| INDIAN RIVER | 477.74 | 530.86 | 541.35 | 630.00 | 668.01 | 722.33 | 796.51 | 839.42 |
| CAPE HENLOPEN | 496.63 | 556.62 | 572.96 | 640.33 | 649.42 | 691.50 | 761.01 | 841.81 |
| ALEXIS I DUPONT | 530.49 | 596.96 | 621.90 | 682.26 | 721.61 | 775.87 | 887.76 | 956.20 |

STATISTICS FOR TABLE 17

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| MEAN | 502.91 | 570.34 | 588.39 | 664.92 | 704.82 | 763.66 | 849.30 | 918.15 |
| MINIMUM | 347.71 | 402.39 | 431.68 | 532.16 | 542.73 | 594.19 | 648.49 | 697.49 |
| MAXIMUM | 573.75 | 666.88 | 674.27 | 752.29 | 836.83 | 906.91 | 1030.35 | 1193.02 |
| RANGE | 226.04 | 264.49 | 242.59 | 220.13 | 294.10 | 312.72 | 381.86 | 495.53 |
| MAX/MIN | 1.65 | 1.66 | 1.56 | 1.41 | 1.54 | 1.53 | 1.59 | 1.71 |
| STANDARD DEVIATION | 43.37 | 49.36 | 51.00 | 47.90 | 61.35 | 65.77 | 80.35 | 96.25 |
| COEFF. OF VAR. | 0.09 | 0.09 | 0.09 | 0.07 | 0.09 | 0.09 | 0.09 | 0.10 |
| SIMPLE CORR(FULL VAL | 0.355 | 0.250 | 0.228 | 0.074 | 0.056 | 0.016 | 0.082 | 0.137 |
| (SIGNIFICANCE LEVEL) | (.048) | (.125) | (.148) | (.368) | (.400) | (.472) | (.355) | (.267) |
| BETA (FULL VALUE) | 0.1825 | 0.1474 | 0.1348 | 0.0428 | 0.0367 | 0.0104 | 0.0611 | 0.1098 |
| STANDARD ERROR | 0.1049 | 0.1239 | 0.1254 | 0.1240 | 0.1408 | 0.1440 | 0.1623 | 0.1737 |

TABLE 18 DIVISIONS 1 + 2 + 3 PER STUDENT -- ADJUSTED FOR PRICE CHANGES

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| CAESAR RODNEY | 397.84 | 428.08 | 431.68 | 495.96 | 473.58 | 478.41 | 484.31 | 494.67 |
| LAKE FOREST | 552.78 | 583.04 | 550.70 | 584.58 | 578.80 | 592.97 | 599.32 | 604.02 |
| DE LA WARR | 620.66 | 655.99 | 655.83 | 692.62 | 713.88 | 730.20 | 769.49 | 846.11 |
| MILFORD | 563.79 | 595.27 | 591.71 | 599.45 | 591.89 | 596.72 | 602.33 | 613.03 |
| LAUREL | 567.83 | 611.77 | 579.49 | 636.99 | 639.28 | 620.75 | 638.20 | 627.67 |
| SMYRNA | 584.94 | 611.84 | 571.27 | 598.17 | 598.97 | 593.20 | 628.94 | 628.95 |
| WOODBRIDGE | 540.98 | 572.73 | 537.90 | 573.06 | 556.07 | 559.91 | 545.56 | 575.25 |
| NC-GUNNING BEDFORD | 562.47 | 586.79 | 562.52 | 607.71 | 597.95 | 595.90 | 613.65 | 626.99 |
| NEWARK | 561.19 | 583.59 | 579.29 | 618.30 | 612.62 | 605.17 | 618.26 | 612.41 |
| DELMAR | 656.46 | 709.45 | 674.27 | 684.44 | 730.22 | 724.33 | 713.34 | 691.45 |
| APPOQUINIMINK | 587.81 | 669.09 | 670.10 | 701.11 | 674.78 | 658.81 | 703.01 | 711.16 |
| STANTON | 601.43 | 640.01 | 630.48 | 677.52 | 669.41 | 668.15 | 686.94 | 719.40 |
| SEAFORD | 610.36 | 623.13 | 607.90 | 605.60 | 584.75 | 598.22 | 601.10 | 628.45 |
| CONRAD | 551.76 | 583.85 | 576.14 | 615.36 | 610.40 | 624.02 | 656.67 | 694.09 |
| CLAYMONT | 566.94 | 586.56 | 574.31 | 608.29 | 613.23 | 611.25 | 651.90 | 671.77 |
| WILMINGTON | 642.59 | 646.11 | 635.64 | 638.96 | 630.93 | 637.57 | 645.23 | 693.91 |
| CAPITAL | 563.88 | 593.69 | 570.67 | 588.63 | 586.08 | 588.52 | 599.39 | 607.21 |
| MARSHALLTON-MCKEAN | 568.42 | 604.97 | 596.44 | 640.74 | 647.27 | 660.18 | 682.47 | 703.27 |
| ALFRED I DUPONT | 623.01 | 654.95 | 600.80 | 634.16 | 627.38 | 614.89 | 668.91 | 684.43 |
| MOUNT PLEASANT | 587.49 | 617.29 | 599.65 | 631.38 | 628.77 | 619.60 | 653.14 | 672.11 |
| INDIAN RIVER | 546.61 | 564.74 | 541.35 | 587.14 | 582.90 | 581.58 | 594.85 | 595.33 |
| CAPE HENLOPEN | 568.23 | 592.15 | 572.96 | 596.77 | 566.69 | 556.76 | 568.34 | 597.03 |
| ALEXIS I DUPONT | 606.97 | 635.07 | 621.90 | 635.85 | 629.68 | 624.69 | 663.00 | 678.16 |

STATISTICS FOR TABLE 18

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| MEAN | 575.41 | 605.74 | 588.39 | 619.68 | 615.03 | 614.86 | 634.28 | 651.17 |
| MINIMUM | 397.84 | 428.07 | 431.68 | 495.96 | 473.59 | 478.41 | 484.31 | 494.67 |
| MAXIMUM | 656.46 | 709.45 | 674.27 | 701.11 | 730.22 | 730.20 | 769.49 | 846.11 |
| RANGE | 258.63 | 281.37 | 242.59 | 205.15 | 256.63 | 251.79 | 285.18 | 351.44 |
| MAX/MIN | 1.65 | 1.66 | 1.56 | 1.41 | 1.54 | 1.53 | 1.59 | 1.71 |
| STANDARD DEVIATION | 49.62 | 52.51 | 51.00 | 44.64 | 53.53 | 52.95 | 60.01 | 68.26 |
| COEFF. OF VAR. | 0.09 | 0.09 | 0.09 | 0.07 | 0.09 | 0.09 | 0.09 | 0.10 |
| SIMPLE CORR(FULL VAL<br>(SIGNIFICANCE LEVEL) | 0.355<br>(.048) | 0.250<br>(.125) | 0.228<br>(.148) | 0.074<br>(.368) | 0.056<br>(.400) | 0.016<br>(.472) | 0.082<br>(.355) | 0.137<br>(.267) |
| BETA (FULL VALUE)<br>STANDARD ERROR | 0.1595<br>0.0801 | 0.1386<br>0.1095 | 0.1348<br>0.1254 | 0.0459<br>0.1428 | 0.0421<br>0.1849 | 0.0129<br>0.2221 | 0.0818<br>0.2910 | 0.1548<br>0.3453 |

Note: Deflated by the State and local government component of the GNP deflator (Source: Economic Report of the President, 1978, Table B-3, p. 261).

TABLE 19 STATE REVENUE RECEIPTS PER STUDENT

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| CAESAR RODNEY | 442.55 | 503.67 | 545.53 | 630.99 | 674.10 | 738.16 | 796.14 | 857.09 |
| LAKE FOREST | 647.83 | 732.12 | 723.06 | 787.78 | 831.90 | 918.60 | 990.87 | 1060.51 |
| DE LA WARR | 632.24 | 739.10 | 766.26 | 848.46 | 975.73 | 1084.22 | 1211.17 | 1391.58 |
| MILFORD | 606.03 | 692.82 | 733.50 | 812.56 | 864.24 | 940.13 | 1009.21 | 1085.74 |
| LAUREL | 600.70 | 664.63 | 668.91 | 820.24 | 935.22 | 986.27 | 1064.69 | 1086.53 |
| SMYRNA | 666.50 | 761.14 | 854.02 | 830.30 | 882.16 | 937.10 | 1060.90 | 1129.10 |
| WOODBRIDGE | 620.09 | 654.81 | 661.62 | 751.18 | 800.98 | 875.46 | 925.06 | 1022.88 |
| NC-GUNNING BEDFORD | 580.76 | 665.03 | 725.87 | 841.14 | 870.14 | 926.10 | 1027.65 | 1109.58 |
| NEWARK | 619.30 | 719.17 | 756.24 | 858.68 | 928.32 | 975.70 | 1067.34 | 1095.47 |
| DELMAR | 720.55 | 814.53 | 823.25 | 901.34 | 1020.23 | 1100.69 | 1191.89 | 1245.50 |
| APPOQUINIMINK | 633.23 | 774.86 | 816.81 | 871.62 | 945.23 | 999.77 | 1170.28 | 1324.85 |
| STANTON | 642.50 | 736.10 | 768.86 | 875.58 | 941.06 | 1019.15 | 1115.06 | 1236.93 |
| SEAFORD | 689.70 | 800.57 | 739.33 | 782.26 | 832.60 | 886.24 | 977.61 | 1071.18 |
| CONRAD | 590.45 | 671.67 | 691.93 | 767.12 | 834.13 | 906.13 | 1019.85 | 1135.32 |
| CLAYMONT | 615.68 | 672.75 | 692.74 | 759.85 | 824.31 | 880.89 | 997.86 | 1079.65 |
| WILMINGTON | 648.92 | 702.29 | 718.70 | 772.00 | 840.64 | 917.63 | 1039.31 | 1212.27 |
| CAPITAL | 646.51 | 713.95 | 726.34 | 783.42 | 841.89 | 913.33 | 990.38 | 1062.36 |
| MARSHALLTON-MCKEAN | 599.45 | 692.77 | 715.39 | 802.51 | 891.02 | 984.29 | 1092.02 | 1199.60 |
| ALFRED I DUPONT | 696.60 | 760.13 | 749.01 | 827.65 | 891.10 | 929.58 | 1049.92 | 1157.06 |
| MOUNT PLEASANT | 597.01 | 673.82 | 697.66 | 780.19 | 868.29 | 920.79 | 1020.48 | 1104.28 |
| INDIAN RIVER | 608.85 | 664.26 | 670.74 | 778.54 | 839.93 | 909.56 | 996.03 | 1059.24 |
| CAPE HENLOPEN | 615.45 | 682.21 | 694.67 | 774.42 | 795.06 | 851.93 | 936.38 | 1039.54 |
| ALEXIS I DUPONT | 712.51 | 810.91 | 842.75 | 928.92 | 996.24 | 1052.23 | 1169.00 | 1289.42 |

STATISTICS FOR TABLE 19

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| MEAN | 559.52 | 638.17 | 651.67 | 724.85 | 874.97 | 942.63 | 1039.94 | 1132.86 |
| MINIMUM | 442.55 | 503.67 | 545.53 | 630.99 | 674.10 | 738.16 | 796.14 | 857.09 |
| MAXIMUM | 720.55 | 814.53 | 854.02 | 928.92 | 1020.23 | 1100.69 | 1211.17 | 1391.58 |
| RANGE | 278.00 | 310.86 | 308.49 | 297.93 | 346.13 | 362.53 | 415.03 | 534.49 |
| MAX/MIN | 1.63 | 1.62 | 1.57 | 1.47 | 1.51 | 1.49 | 1.52 | 1.62 |
| STANDARD DEVIATION | 55.99 | 66.78 | 67.35 | 61.28 | 75.69 | 79.16 | 93.88 | 114.70 |
| COEFF. OF VAR. | 0.10 | 0.10 | 0.10 | 0.08 | 0.09 | 0.08 | 0.09 | 0.10 |
| SIMPLE CORR(FULL VAL | 0.475 | 0.357 | 0.324 | 0.305 | 0.184 | 0.099 | 0.125 | 0.190 |
| (SIGNIFICANCE LEVEL) | (.011) | (.047) | (.066) | (.078) | (.200) | (.327) | (.285) | (.193) |
| BETA (FULL VALUE) | 0.3156 | 0.2848 | 0.2526 | 0.2225 | 0.1477 | 0.0783 | 0.1091 | 0.1814 |
| STANDARD ERROR | 0.1275 | 0.1617 | 0.1609 | 0.1515 | 0.1711 | 0.1725 | 0.1888 | 0.2052 |

Note: See note to Table 8.

TABLE 20 STATE REVENUE RECEIPTS PER STUDENT -- ADJUSTED FOR PRICE CHANGES

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| CAESAR RODNEY | 506.36 | 535.82 | 545.53 | 588.06 | 588.22 | 594.33 | 594.58 | 607.86 |
| LAKE FOREST | 741.22 | 778.86 | 725.06 | 734.18 | 725.92 | 739.61 | 740.01 | 752.13 |
| DE LA WARR | 723.39 | 786.28 | 766.26 | 790.74 | 851.42 | 872.97 | 904.53 | 986.93 |
| MILFORD | 693.40 | 737.15 | 733.50 | 757.28 | 754.14 | 756.95 | 753.71 | 770.03 |
| LAUREL | 687.30 | 707.06 | 668.91 | 764.44 | 816.07 | 794.10 | 795.14 | 770.59 |
| SMYRNA | 762.59 | 809.72 | 854.02 | 773.81 | 769.77 | 754.51 | 792.31 | 800.78 |
| WOODBRIDGE | 709.49 | 696.60 | 661.62 | 700.08 | 698.94 | 704.88 | 690.86 | 725.45 |
| NC-GUNNING BEDFORD | 664.48 | 707.47 | 725.87 | 783.92 | 759.28 | 745.65 | 767.48 | 786.94 |
| NEWARK | 708.58 | 765.08 | 756.24 | 800.26 | 810.06 | 785.59 | 797.12 | 776.93 |
| DELMAR | 824.42 | 866.52 | 823.25 | 840.02 | 890.25 | 886.22 | 890.13 | 883.33 |
| APPOQUINIMINK | 724.52 | 824.32 | 816.81 | 812.32 | 824.80 | 804.97 | 874.00 | 939.61 |
| STANTON | 735.12 | 783.08 | 768.86 | 816.01 | 821.17 | 820.57 | 832.75 | 877.25 |
| SEAFORD | 789.14 | 851.67 | 739.33 | 729.04 | 726.53 | 713.56 | 730.11 | 759.70 |
| CONRAD | 675.57 | 714.54 | 691.93 | 714.93 | 727.86 | 729.58 | 761.65 | 805.19 |
| CLAYMONT | 704.44 | 715.69 | 692.74 | 708.15 | 719.29 | 709.25 | 745.23 | 765.71 |
| WILMINGTON | 742.47 | 747.11 | 718.70 | 719.48 | 733.54 | 738.83 | 776.18 | 859.77 |
| CAPITAL | 739.71 | 759.52 | 726.34 | 730.12 | 734.63 | 735.37 | 739.64 | 753.45 |
| MARSHALLTON-MCKEAN | 685.87 | 736.99 | 715.39 | 747.91 | 777.50 | 792.51 | 815.55 | 850.78 |
| ALFRED I DUPONT | 797.02 | 808.65 | 749.01 | 771.35 | 777.57 | 748.46 | 784.11 | 820.61 |
| MOUNT PLEASANT | 683.08 | 716.82 | 697.66 | 727.11 | 757.67 | 741.38 | 762.12 | 783.18 |
| INDIAN RIVER | 696.62 | 706.66 | 670.74 | 725.58 | 732.90 | 732.34 | 743.86 | 751.24 |
| CAPE HENLOPEN | 704.17 | 725.76 | 694.67 | 721.73 | 693.77 | 685.94 | 699.31 | 737.26 |
| ALEXIS I DUPONT | 815.23 | 862.67 | 842.75 | 865.73 | 869.32 | 847.20 | 873.04 | 914.48 |

STATISTICS FOR TABLE 20

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| MEAN | 640.18 | 678.90 | 651.67 | 675.54 | 763.50 | 758.96 | 776.65 | 803.4 |
| MINIMUM | 506.35 | 535.82 | 545.53 | 588.06 | 588.22 | 594.33 | 594.58 | 607.8 |
| MAXIMUM | 824.43 | 866.52 | 854.02 | 865.72 | 890.25 | 886.22 | 904.53 | 986.9 |
| RANGE | 318.08 | 330.70 | 308.49 | 277.66 | 302.03 | 291.89 | 309.96 | 379.0 |
| MAX/MIN | 1.63 | 1.62 | 1.57 | 1.47 | 1.51 | 1.49 | 1.52 | 1.6 |
| STANDARD DEVIATION | 64.06 | 71.04 | 67.35 | 57.11 | 66.05 | 63.74 | 70.11 | 81.3 |
| COEFF. OF VAR. | 0.10 | 0.10 | 0.10 | 0.08 | 0.09 | 0.08 | 0.09 | 0.1 |
| SIMPLE CORR(FULL VAL<br>(SIGNIFICANCE LEVEL) | 0.475<br>(.011) | 0.357<br>(.047) | 0.324<br>(.066) | 0.305<br>(.078) | 0.184<br>(.200) | 0.099<br>(.327) | 0.125<br>(.285) | 0.19<br>(.193 |
| BETA (FULL VALUE)<br>STANDARD ERROR | 0.2758<br>0.0974 | 0.2677<br>0.1429 | 0.2526<br>0.1609 | 0.2387<br>0.1744 | 0.1693<br>0.2247 | 0.0972<br>0.2661 | 0.1461<br>0.3385 | 0.259<br>0.400 |

Note: Deflated by the State and local government component of the GNP deflator (Source: Economic Report of the President, 1978, Table B-3, p. 261).

TABLE 21 FEDERAL REVENUE RECEIPTS PER STUDENT

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| CAESAR RODNEY | 194.31 | 222.19 | 247.61 | 289.99 | 314.76 | 333.78 | 373.16 | 396.09 |
| LAKE FOREST | 53.24 | 39.42 | 41.83 | 34.80 | 45.20 | 53.03 | 91.72 | 79.81 |
| DE LA WARR | 24.01 | 36.54 | 98.19 | 121.33 | 107.36 | 127.86 | 114.65 | 98.05 |
| MILFORD | 51.31 | 74.53 | 92.49 | 106.66 | 102.06 | 96.33 | 100.28 | 57.92 |
| LAUREL | 109.00 | 137.59 | 144.55 | 130.64 | 126.20 | 125.96 | 103.17 | 183.92 |
| SMYRNA | 14.69 | 43.34 | 51.88 | 45.68 | 42.71 | 52.11 | 82.57 | 90.37 |
| WOODBRIDGE | 33.08 | 26.91 | 35.34 | 33.19 | 40.30 | 43.42 | 101.66 | 73.50 |
| NC-GUNNING BEDFORD | 6.32 | 13.33 | 15.82 | 18.54 | 21.80 | 21.35 | 24.28 | 24.48 |
| NEWARK | 23.51 | 25.36 | 22.98 | 30.35 | 36.61 | 46.34 | 49.50 | 40.09 |
| DELMAR | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| APPOQUINIMINK | 29.57 | 77.89 | 88.26 | 94.20 | 139.25 | 178.31 | 181.04 | 241.89 |
| STANTON | 8.94 | 11.89 | 15.90 | 16.65 | 12.65 | 27.16 | 32.88 | 40.61 |
| SEAFORD | 34.21 | 39.43 | 51.21 | 28.93 | 58.33 | 45.56 | 70.47 | 54.68 |
| CONRAD | 5.49 | 14.49 | 17.98 | 43.75 | 34.10 | 38.87 | 59.64 | 61.86 |
| CLAYMONT | 21.35 | 24.65 | 29.81 | 24.44 | 26.10 | 35.73 | 50.88 | 58.35 |
| WILMINGTON | 144.68 | 171.17 | 202.57 | 210.62 | 240.04 | 241.37 | 343.92 | 440.70 |
| CAPITAL | 83.40 | 49.28 | 59.50 | 53.75 | 89.63 | 135.22 | 168.90 | 157.61 |
| MARSHALLTON-MCKEAN | 33.80 | 23.64 | 22.79 | 21.73 | 18.63 | 30.29 | 31.57 | 29.32 |
| ALFRED I DUPONT | 11.10 | 8.64 | 10.43 | 9.32 | 8.49 | 10.82 | 8.05 | 13.40 |
| MOUNT PLEASANT | 5.02 | 6.69 | 8.86 | 13.47 | 14.03 | 6.10 | 8.15 | 24.97 |
| INDIAN RIVER | 31.30 | 35.55 | 50.33 | 37.64 | 47.34 | 54.53 | 85.70 | 82.29 |
| CAPE HENLOPEN | 19.32 | 30.96 | 39.31 | 32.92 | 27.39 | 31.33 | 52.20 | 34.29 |
| ALEXIS I DUPONT | 11.63 | 17.05 | 17.96 | 13.88 | 9.45 | 22.40 | 19.22 | 61.43 |

STATISTICS FOR TABLE 21

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| MEAN | 43.15 | 51.39 | 62.07 | 64.20 | 71.02 | 79.90 | 97.89 | 106.62 |
| MINIMUM | 5.02 | 6.69 | 8.86 | 9.32 | 8.49 | 6.10 | 8.05 | 13.40 |
| MAXIMUM | 194.30 | 222.19 | 247.61 | 289.98 | 314.76 | 333.78 | 373.16 | 440.70 |
| RANGE | 189.28 | 215.50 | 238.75 | 280.66 | 306.27 | 327.68 | 365.11 | 427.30 |
| MAX/MIN | 38.71 | 33.21 | 27.95 | 31.11 | 37.07 | 54.72 | 46.36 | 32.89 |
| STANDARD DEVIATION | 48.47 | 55.88 | 63.11 | 70.85 | 77.90 | 82.21 | 96.17 | 115.17 |
| COEFF. OF VAR. | 1.12 | 1.09 | 1.02 | 1.10 | 1.10 | 1.03 | 0.98 | 1.08 |
| SIMPLE CORR(FULL VAL<br>(SIGNIFICANCE LEVEL) | -0.218<br>(.165) | -0.229<br>(.153) | -0.282<br>(.101) | -0.337<br>(.062) | -0.340<br>(.061) | -0.369<br>(.046) | -0.338<br>(.062) | -0.299<br>(.088) |
| BETA (FULL VALUE)<br>STANDARD ERROR | -0.1232<br>0.1234 | -0.1485<br>0.1413 | -0.2016<br>0.1532 | -0.2780<br>0.1734 | -0.2731<br>0.1687 | -0.2982<br>0.1631 | -0.2969<br>0.1849 | -0.2837<br>0.2023 |

Note: For purposes of the Summary Statistics, Delmar is excluded from the calculations.

TABLE 22 FEDERAL REVENUE RECEIPTS PER STUDENT -- ADJUSTED FOR PRICE CHANGES

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| CAESAR RODNEY | 222.32 | 236.37 | 247.61 | 270.26 | 274.66 | 268.75 | 278.69 | 280.91 |
| LAKE FOREST | 60.91 | 41.94 | 41.83 | 32.43 | 39.44 | 42.70 | 68.50 | 56.60 |
| DE LA WARR | 27.48 | 38.87 | 98.19 | 113.08 | 93.68 | 102.95 | 85.62 | 69.54 |
| MILFORD | 58.71 | 79.29 | 92.49 | 99.41 | 89.06 | 77.56 | 74.89 | 41.08 |
| LAUREL | 124.71 | 146.37 | 144.55 | 121.75 | 110.12 | 101.42 | 77.05 | 130.44 |
| SMYRNA | 16.81 | 46.10 | 51.88 | 42.58 | 37.27 | 41.96 | 61.67 | 64.09 |
| WOODBRIDGE | 37.85 | 28.63 | 35.34 | 30.94 | 35.16 | 34.96 | 75.92 | 52.13 |
| NC-GUNNING BEDFORD | 7.23 | 14.18 | 15.82 | 17.28 | 19.02 | 17.19 | 18.13 | 17.36 |
| NEWARK | 26.90 | 26.98 | 22.98 | 28.28 | 31.94 | 37.31 | 36.97 | 28.44 |
| DELMAR | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| APPOQUINIMINK | 33.83 | 82.86 | 88.26 | 87.79 | 121.51 | 143.57 | 135.20 | 171.55 |
| STANTON | 10.23 | 12.65 | 15.90 | 15.52 | 11.03 | 21.86 | 24.56 | 28.80 |
| SEAFORD | 39.14 | 41.94 | 51.21 | 26.96 | 50.89 | 36.68 | 52.63 | 38.78 |
| CONRAD | 6.28 | 15.42 | 17.98 | 40.77 | 29.76 | 31.29 | 44.54 | 43.87 |
| CLAYMONT | 24.43 | 26.23 | 29.81 | 22.77 | 22.78 | 28.77 | 38.00 | 41.38 |
| WILMINGTON | 165.54 | 182.10 | 202.57 | 196.29 | 209.46 | 194.34 | 256.85 | 312.55 |
| CAPITAL | 95.42 | 52.43 | 59.50 | 50.09 | 78.21 | 108.87 | 126.14 | 111.78 |
| MARSHALLTON-MCKEAN | 38.67 | 25.15 | 22.79 | 20.25 | 16.26 | 24.39 | 23.58 | 20.79 |
| ALFRED I DUPONT | 12.70 | 9.19 | 10.43 | 8.69 | 7.41 | 8.71 | 6.01 | 9.50 |
| MOUNT PLEASANT | 5.75 | 7.12 | 8.86 | 12.56 | 12.24 | 4.91 | 6.09 | 17.71 |
| INDIAN RIVER | 35.81 | 37.82 | 50.33 | 35.08 | 41.31 | 43.91 | 64.00 | 58.36 |
| CAPE HENLOPEN | 22.10 | 32.93 | 39.31 | 30.68 | 23.90 | 25.22 | 38.98 | 24.32 |
| ALEXIS I DUPONT | 13.31 | 18.14 | 17.96 | 12.94 | 8.24 | 18.04 | 14.36 | 43.57 |

STATISTICS FOR TABLE 22

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| MEAN | 49.37 | 54.67 | 62.07 | 59.83 | 61.97 | 64.33 | 73.11 | 75.62 |
| MINIMUM | 5.74 | 7.12 | 8.86 | 8.69 | 7.41 | 4.91 | 6.01 | 9.50 |
| MAXIMUM | 222.31 | 236.37 | 247.61 | 270.25 | 274.66 | 268.74 | 278.69 | 312.55 |
| RANGE | 216.57 | 229.26 | 238.75 | 261.57 | 267.25 | 263.83 | 272.67 | 303.05 |
| MAX/MIN | 38.71 | 33.21 | 27.95 | 31.11 | 37.07 | 54.72 | 46.36 | 32.89 |
| STANDARD DEVIATION | 55.46 | 59.45 | 63.11 | 66.03 | 67.98 | 66.19 | 71.82 | 81.68 |
| COEFF. OF VAR. | 1.12 | 1.09 | 1.02 | 1.10 | 1.10 | 1.03 | 0.98 | 1.08 |
| SIMPLE CORR(FULL VAL | -0.218 | -0.229 | -0.282 | -0.337 | -0.340 | -0.369 | -0.338 | -0.299 |
| (SIGNIFICANCE LEVEL) | (.165) | (.153) | (.101) | (.062) | (.061) | (.046) | (.062) | (.088) |
| BETA (FULL VALUE) | -0.1077 | -0.1396 | -0.2016 | -0.2983 | -0.3130 | -0.3704 | -0.3975 | -0.4000 |
| STANDARD ERROR | 0.0943 | 0.1249 | 0.1532 | 0.1996 | 0.2216 | 0.2593 | 0.3315 | 0.4022 |

Note: Deflated by the State and local government component of the GNP deflator (Source: Economic Report of the President, 1978, Table B-3, p. 261).

TABLE 23 LOCAL REVENUE RECIEPTS PER STUDENT

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| CAESAR RODNEY | 87.27 | 85.69 | 84.25 | 88.75 | 94.80 | 98.78 | 98.55 | 100.32 |
| LAKE FOREST | 114.93 | 121.87 | 130.21 | 133.02 | 136.68 | 140.52 | 146.33 | 160.58 |
| DE LA WARR | 167.15 | 186.93 | 188.78 | 206.32 | 301.26 | 328.24 | 356.91 | 356.56 |
| MILFORD | 128.11 | 124.21 | 119.57 | 122.07 | 132.65 | 140.79 | 139.38 | 146.11 |
| LAUREL | 103.83 | 163.35 | 160.90 | 92.06 | 133.10 | 146.30 | 162.62 | 142.98 |
| SMYRNA | 180.29 | 183.32 | 165.07 | 167.14 | 169.06 | 168.25 | 197.30 | 212.83 |
| WOODBRIDGE | 88.12 | 88.47 | 98.37 | 103.19 | 108.58 | 101.81 | 112.67 | 110.95 |
| NC-GUNNING BEDFORD | 229.26 | 268.76 | 282.07 | 610.42 | 350.56 | 374.68 | 374.58 | 385.69 |
| NEWARK | 245.01 | 288.57 | 326.66 | 342.80 | 406.83 | 426.70 | 483.73 | 511.00 |
| DELMAR | 115.60 | 122.13 | 142.06 | 139.97 | 223.18 | 196.99 | 212.00 | 193.26 |
| APPOQUINIMINK | 113.18 | 135.50 | 169.94 | 181.47 | 262.76 | 282.78 | 293.68 | 325.37 |
| STANTON | 271.75 | 304.86 | 303.59 | 322.91 | 348.57 | 420.13 | 503.15 | 543.93 |
| SEAFORD | 117.46 | 137.83 | 142.26 | 153.16 | 173.32 | 182.24 | 166.36 | 181.05 |
| CONRAD | 207.81 | 208.98 | 236.13 | 234.39 | 269.56 | 314.95 | 318.89 | 374.40 |
| CLAYMONT | 248.53 | 277.93 | 292.25 | 284.45 | 323.43 | 393.72 | 397.19 | 470.10 |
| WILMINGTON | 246.16 | 335.63 | 398.41 | 513.78 | 574.00 | 617.92 | 642.03 | 761.57 |
| CAPITAL | 199.64 | 202.40 | 200.91 | 235.17 | 235.41 | 281.80 | 308.70 | 326.74 |
| MARSHALLTON-MCKEAN | 309.07 | 325.40 | 370.51 | 349.95 | 379.18 | 433.67 | 433.24 | 509.21 |
| ALFRED I DUPONT | 318.64 | 381.27 | 383.78 | 391.53 | 450.11 | 517.60 | 551.67 | 596.98 |
| MOUNT PLEASANT | 303.98 | 324.44 | 382.22 | 397.19 | 449.55 | 487.63 | 520.22 | 558.47 |
| INDIAN RIVER | 122.76 | 127.14 | 134.34 | 141.51 | 174.17 | 193.03 | 204.24 | 213.36 |
| CAPE HENLOPEN | 226.62 | 254.12 | 276.80 | 304.42 | 331.53 | 456.87 | 402.87 | 507.00 |
| ALEXIS I DUPONT | 539.05 | 671.60 | 656.69 | 658.17 | 777.72 | 835.41 | 831.11 | 886.28 |

STATISTICS FOR TABLE 23

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| MEAN | 203.66 | 231.32 | 245.47 | 268.43 | 295.93 | 327.86 | 341.63 | 372.81 |
| MINIMUM | 87.27 | 85.69 | 84.25 | 88.75 | 94.80 | 98.78 | 98.55 | 100.32 |
| MAXIMUM | 539.05 | 671.60 | 656.69 | 658.17 | 777.72 | 835.41 | 831.11 | 886.28 |
| RANGE | 451.78 | 585.91 | 572.44 | 569.42 | 682.92 | 736.63 | 732.56 | 785.96 |
| MAX/MIN | 6.18 | 7.84 | 7.79 | 7.42 | 8.20 | 8.46 | 8.43 | 8.83 |
| STANDARD DEVIATION | 104.55 | 130.30 | 134.08 | 162.06 | 164.39 | 184.50 | 188.58 | 214.36 |
| COEFF. OF VAR. | 0.51 | 0.56 | 0.55 | 0.60 | 0.56 | 0.56 | 0.55 | 0.57 |
| SIMPLE CORR(FULL VAL<br>(SIGNIFICANCE LEVEL) | 0.759<br>(.001) | 0.769<br>(.001) | 0.746<br>(.001) | 0.615<br>(.001) | 0.740<br>(.001) | 0.773<br>(.001) | 0.717<br>(.001) | 0.736<br>(.001) |
| BETA (FULL VALUE)<br>STANDARD ERROR | 0.9411<br>0.1762 | 1.1907<br>0.2160 | 1.1579<br>0.2255 | 1.1858<br>0.3318 | 1.2818<br>0.2542 | 1.4319<br>0.2563 | 1.2548<br>0.2666 | 1.3171<br>0.2645 |

Note: (Source: Report of Educational Statistics).

TABLE 24 LOCAL REVENUE RECEIPTS PER STUDENT -- ADJUSTED FOR PRICE CHANGES

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| CAESAR RODNEY | 99.86 | 91.16 | 84.25 | 82.71 | 82.73 | 79.54 | 73.60 | 71.15 |
| LAKE FOREST | 131.50 | 129.65 | 130.21 | 123.97 | 119.26 | 113.14 | 109.28 | 113.89 |
| DE LA WARR | 191.24 | 198.86 | 188.78 | 192.28 | 262.97 | 264.29 | 266.55 | 252.88 |
| MILFORD | 146.58 | 132.14 | 119.57 | 115.77 | 115.75 | 113.35 | 104.09 | 103.62 |
| LAUREL | 118.80 | 173.78 | 160.90 | 85.79 | 116.40 | 117.79 | 121.45 | 101.40 |
| SMYRNA | 206.28 | 195.02 | 165.07 | 155.77 | 147.52 | 135.47 | 147.35 | 150.94 |
| WOODBRIDGE | 100.83 | 94.12 | 98.37 | 96.17 | 94.75 | 81.97 | 84.14 | 78.69 |
| NC-GUNNING BEDFORD | 262.31 | 285.92 | 282.07 | 568.89 | 305.90 | 301.67 | 279.75 | 273.54 |
| NEWARK | 280.34 | 306.99 | 326.66 | 319.48 | 355.00 | 343.56 | 361.26 | 362.41 |
| DELMAR | 132.26 | 129.93 | 142.06 | 130.45 | 194.75 | 158.60 | 158.33 | 137.06 |
| APPOQUINIMINK | 129.50 | 144.15 | 169.94 | 169.12 | 229.29 | 227.68 | 219.33 | 230.76 |
| STANTON | 310.92 | 324.32 | 303.59 | 300.94 | 304.16 | 338.27 | 375.77 | 385.77 |
| SEAFORD | 134.40 | 146.62 | 142.26 | 142.74 | 151.24 | 146.73 | 124.24 | 128.41 |
| CONRAD | 237.77 | 222.32 | 236.13 | 218.44 | 235.22 | 253.59 | 238.15 | 265.53 |
| CLAYMONT | 284.36 | 295.67 | 292.25 | 265.10 | 282.23 | 317.00 | 296.63 | 333.41 |
| WILMINGTON | 281.64 | 357.05 | 398.41 | 478.82 | 500.87 | 497.52 | 479.48 | 540.12 |
| CAPITAL | 228.42 | 215.32 | 200.91 | 219.17 | 205.42 | 226.89 | 230.55 | 231.73 |
| MARSHALLTON-MCKEAN | 353.62 | 346.17 | 370.51 | 326.14 | 330.87 | 349.17 | 323.55 | 361.14 |
| ALFRED I DUPONT | 364.58 | 405.60 | 383.78 | 364.90 | 392.76 | 416.75 | 412.00 | 423.39 |
| MOUNT PLEASANT | 347.80 | 345.15 | 382.22 | 370.17 | 392.27 | 392.62 | 388.51 | 396.08 |
| INDIAN RIVER | 140.45 | 135.26 | 134.34 | 131.88 | 151.98 | 155.42 | 152.53 | 151.32 |
| CAPE HENLOPEN | 259.29 | 270.34 | 276.80 | 283.71 | 289.29 | 367.85 | 300.87 | 359.58 |
| ALEXIS I DUPONT | 616.77 | 714.47 | 656.69 | 613.39 | 678.64 | 672.63 | 620.69 | 628.57 |

STATISTICS FOR TABLE 24

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| MEAN | 233.02 | 246.09 | 245.47 | 250.17 | 258.23 | 263.98 | 255.14 | 264.40 |
| MINIMUM | 99.85 | 91.16 | 84.25 | 82.71 | 82.72 | 79.53 | 73.60 | 71.15 |
| MAXIMUM | 616.76 | 714.47 | 656.69 | 613.39 | 678.64 | 672.63 | 620.69 | 628.57 |
| RANGE | 516.91 | 623.31 | 572.44 | 530.68 | 595.92 | 593.10 | 547.09 | 557.42 |
| MAX/MIN | 6.18 | 7.84 | 7.79 | 7.42 | 8.20 | 8.46 | 8.43 | 8.83 |
| STANDARD DEVIATION | 119.62 | 138.62 | 134.08 | 151.03 | 143.45 | 148.55 | 140.84 | 152.03 |
| COEFF. OF VAR. | 0.51 | 0.56 | 0.55 | 0.60 | 0.56 | 0.56 | 0.55 | 0.57 |
| SIMPLE CORR(FULL VAL<br>(SIGNIFICANCE LEVEL) | 0.759<br>(.001) | 0.769<br>(.001) | 0.746<br>(.001) | 0.615<br>(.001) | 0.740<br>(.001) | 0.773<br>(.001) | 0.717<br>(.001) | 0.736<br>(.001) |
| BETA (FULL VALUE)<br>STANDARD ERROR | 0.8225<br>0.1346 | 1.1193<br>0.1909 | 1.1579<br>0.2255 | 1.2724<br>0.3820 | 1.4689<br>0.3338 | 1.7784<br>0.3954 | 1.6802<br>0.4780 | 1.8571<br>0.5259 |

Note: Deflated by the State and local government component of the GNP deflator (Source: Economic Report of the President, 1978, Table B-3, p. 261).

TABLE 25 TAX RATES PER $100 BASED ON FULL VALUATION OF REAL ESTATE

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| CAESAR RODNEY | 0.76800 | 0.73300 | 0.71100 | 0.71200 | 0.70750 | 0.71090 | 0.69580 | 0.65950 |
| LAKE FOREST | 0.76400 | 0.76000 | 0.79600 | 0.79600 | 0.79800 | 0.79260 | 0.78480 | 0.77450 |
| DE LA WARR | 1.14100 | 1.12000 | 1.10600 | 1.15500 | 1.01640 | 1.01640 | 1.15300 | 1.17470 |
| MILFORD | 0.66800 | 0.65000 | 0.63600 | 0.61800 | 0.62100 | 0.60440 | 0.59846 | 0.59130 |
| LAUREL | 0.54400 | 0.79500 | 0.77600 | 0.75800 | 0.70700 | 0.71550 | 0.66910 | 0.71760 |
| SMYRNA | 0.79500 | 0.79100 | 0.81900 | 0.80800 | 0.73320 | 0.67870 | 0.77640 | 0.77250 |
| WOODBRIDGE | 0.60200 | 0.60200 | 0.63400 | 0.61300 | 0.61920 | 0.52790 | 0.51180 | 0.50940 |
| NC-GUNNING BEDFORD | 1.12700 | 1.14800 | 1.22500 | 1.22500 | 0.88200 | 0.88200 | 1.12964 | 1.10060 |
| NEWARK | 1.29400 | 1.42500 | 1.51100 | 1.51200 | 1.11020 | 1.11090 | 1.66570 | 1.69610 |
| DELMAR | 0.53800 | 0.53800 | 0.61000 | 0.55500 | 0.79500 | 0.79720 | 0.79280 | 0.76440 |
| APPOQUINIMINK | 1.17500 | 1.14100 | 1.13700 | 1.11600 | 0.63000 | 0.70170 | 1.26540 | 1.13470 |
| STANTON | 1.61000 | 1.60300 | 1.61000 | 1.62400 | 1.01990 | 1.10460 | 1.56810 | 1.49900 |
| SEAFORD | 0.61400 | 0.64200 | 0.64900 | 0.68200 | 0.67800 | 0.68600 | 0.64600 | 0.61360 |
| CONRAD | 1.00100 | 1.00100 | 1.05700 | 1.03900 | 0.72450 | 0.77200 | 1.06280 | 1.01710 |
| CLAYMONT | 1.21800 | 1.23200 | 1.28100 | 1.35800 | 0.89600 | 0.91700 | 1.30730 | 1.29720 |
| WILMINGTON | 0.94500 | 1.24500 | 1.55500 | 1.99700 | 1.74090 | 1.81510 | 2.16980 | 2.23120 |
| CAPITAL | 0.72000 | 0.71600 | 0.70200 | 0.70200 | 0.70200 | 0.80400 | 0.80400 | 0.80400 |
| MARSHALLTON-MCKEAN | 1.44900 | 1.44900 | 1.52600 | 1.52600 | 0.96250 | 1.00000 | 1.31610 | 1.33590 |
| ALFRED I DUPONT | 1.19700 | 1.39300 | 1.51900 | 1.47000 | 0.91700 | 0.98000 | 1.48929 | 1.51040 |
| MOUNT PLEASANT | 1.13400 | 1.13400 | 1.27400 | 1.27400 | 0.89600 | 0.93800 | 1.25460 | 1.13900 |
| INDIAN RIVER | 0.51100 | 0.49600 | 0.48100 | 0.46600 | 0.46000 | 0.45000 | 0.43970 | 0.42060 |
| CAPE HENLOPEN | 0.79100 | 0.74600 | 0.74400 | 0.73200 | 0.71950 | 0.79300 | 0.69790 | 0.77340 |
| ALEXIS I DUPONT | 0.91700 | 1.15500 | 1.15500 | 1.21700 | 0.84000 | 0.87310 | 1.37140 | 1.36090 |

STATISTICS FOR TABLE 25

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| MEAN | 93.58 | 97.89 | 102.15 | 104.15 | 83.37 | 85.56 | 105.09 | 103.90 |
| MINIMUM | 51.10 | 49.60 | 48.10 | 46.60 | 46.00 | 45.00 | 43.97 | 42.06 |
| MAXIMUM | 161.00 | 160.30 | 161.00 | 199.70 | 174.09 | 182.00 | 216.98 | 223.12 |
| RANGE | 109.90 | 110.70 | 112.90 | 153.10 | 128.09 | 137.00 | 173.01 | 181.06 |
| MAX/MIN | 3.15 | 3.23 | 3.35 | 4.29 | 3.78 | 4.04 | 4.93 | 5.30 |
| STANDARD DEVIATION | 30.88 | 32.60 | 36.47 | 41.03 | 25.09 | 26.98 | 43.36 | 43.80 |
| COEFF. OF VAR. | 0.33 | 0.33 | 0.36 | 0.39 | 0.30 | 0.32 | 0.41 | 0.42 |
| SIMPLE CORR(FULL VAL | -0.091 | 0.041 | 0.076 | 0.108 | 0.126 | 0.202 | 0.240 | 0.257 |
| (SIGNIFICANCE LEVEL) | (.340) | (.426) | (.365) | (.311) | (.283) | (.177) | (.135) | (.118) |
| BETA (FULL VALUE) | -0.0003 | 0.0002 | 0.0003 | 0.0005 | 0.0003 | 0.0005 | 0.0010 | 0.0009 |
| STANDARD ERROR | 0.0008 | 0.0008 | 0.0009 | 0.0011 | 0.0006 | 0.0006 | 0.0009 | 0.0008 |

Note: Combined tax rate based upon full value of real estate and capitation taxes (Source: Report of Educational Statistics).

TABLE 26 CURRENT EXPENDITURES PER STUDENT

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| CAESAR RODNEY | 592.33 | 681.73 | 723.33 | 857.28 | 909.78 | 985.17 | 1109.16 | 1192.78 |
| LAKE FOREST | 670.97 | 771.77 | 735.50 | 890.82 | 868.86 | 975.73 | 1098.69 | 1196.70 |
| DE LA WARR | 672.72 | 799.73 | 867.99 | 1029.20 | 1206.05 | 1273.58 | 1539.71 | 1697.39 |
| MILFORD | 677.65 | 745.33 | 779.52 | 893.65 | 926.82 | 1004.45 | 1057.17 | 1156.05 |
| LAUREL | 704.95 | 815.25 | 807.71 | 943.99 | 1043.72 | 1092.85 | 1198.02 | 1227.88 |
| SMYRNA | 647.22 | 749.87 | 731.77 | 824.05 | 890.03 | 970.23 | 1092.96 | 1207.91 |
| WOODBRIDGE | 612.12 | 661.14 | 697.87 | 817.91 | 892.11 | 946.97 | 1027.17 | 1140.88 |
| NC-GUNNING BEDFORD | 659.61 | 759.56 | 757.53 | 888.25 | 948.52 | 1049.33 | 1150.80 | 1288.89 |
| NEWARK | 680.43 | 808.50 | 848.01 | 957.18 | 1063.17 | 1162.36 | 1274.80 | 1362.33 |
| DELMAR | 729.32 | 827.88 | 874.57 | 964.81 | 1086.06 | 1182.08 | 1196.13 | 1262.16 |
| APPOQUINIMINK | 665.98 | 916.69 | 942.44 | 1053.57 | 1183.94 | 1281.02 | 1483.30 | 1577.76 |
| STANTON | 727.10 | 860.27 | 888.15 | 1005.91 | 1096.36 | 1227.15 | 1415.90 | 1560.04 |
| SEAFORD | 696.36 | 776.00 | 767.44 | 851.69 | 892.45 | 994.66 | 1127.92 | 1207.62 |
| CONRAD | 636.76 | 739.37 | 765.28 | 891.50 | 971.24 | 1065.20 | 1272.47 | 1450.21 |
| CLAYMONT | 658.31 | 763.77 | 776.47 | 888.42 | 986.01 | 1066.59 | 1212.68 | 1390.22 |
| WILMINGTON | 953.46 | 1108.24 | 1166.79 | 1330.70 | 1512.67 | 1685.50 | 1830.71 | 2138.48 |
| CAPITAL | 734.93 | 784.84 | 795.87 | 901.31 | 960.97 | 1145.37 | 1258.13 | 1353.59 |
| MARSHALLTON-MCKEAN | 771.20 | 883.65 | 933.61 | 1015.88 | 1129.72 | 1251.09 | 1351.57 | 1520.47 |
| ALFRED I DUPONT | 801.06 | 958.28 | 903.88 | 1024.61 | 1083.27 | 1187.71 | 1369.26 | 1533.31 |
| MOUNT PLEASANT | 760.08 | 861.46 | 908.31 | 1015.32 | 1154.77 | 1232.77 | 1427.96 | 1553.01 |
| INDIAN RIVER | 683.29 | 720.19 | 739.44 | 880.12 | 932.91 | 1061.88 | 1172.50 | 1269.94 |
| CAPE HENLOPEN | 703.25 | 813.79 | 859.50 | 1003.93 | 1007.32 | 1078.87 | 1183.61 | 1407.17 |
| ALEXIS I DUPONT | 918.93 | 1116.60 | 1201.47 | 1369.44 | 1506.55 | 1508.88 | 1627.99 | 1677.82 |

STATISTICS FOR TABLE 26

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| MEAN | 711.22 | 822.78 | 847.14 | 969.98 | 1054.49 | 1149.11 | 1281.68 | 1407.50 |
| MINIMUM | 592.33 | 661.14 | 697.87 | 817.91 | 868.86 | 946.97 | 1027.17 | 1140.88 |
| MAXIMUM | 953.46 | 1116.60 | 1201.47 | 1369.43 | 1512.67 | 1685.50 | 1830.71 | 2138.00 |
| RANGE | 361.13 | 455.46 | 503.60 | 551.52 | 643.81 | 738.53 | 803.54 | 997.12 |
| MAX/MIN | 1.61 | 1.69 | 1.72 | 1.67 | 1.74 | 1.78 | 1.78 | 1.87 |
| STANDARD DEVIATION | 86.45 | 115.02 | 128.64 | 138.80 | 174.96 | 177.15 | 199.62 | 232.73 |
| COEFF. OF VAR. | 0.12 | 0.14 | 0.15 | 0.14 | 0.17 | 0.15 | 0.16 | 0.17 |
| SIMPLE CORR(FULL VAL | 0.722 | 0.674 | 0.656 | 0.632 | 0.557 | 0.499 | 0.437 | 0.442 |
| (SIGNIFICANCE LEVEL) | (.001) | (.001) | (.001) | (.001) | (.003) | (.008) | (.019) | (.017) |
| BETA (FULL VALUE) | 0.7404 | 0.8808 | 0.9779 | 1.0435 | 1.0274 | 0.8868 | 0.8091 | 0.8589 |
| STANDARD ERROR | 0.1547 | 0.2282 | 0.2451 | 0.2793 | 0.3341 | 0.3363 | 0.3640 | 0.3804 |

Note: (Source: Report of Educational Statistics).

TABLE 27 CURRENT EXPENDITURES PER STUDENT -- ADJUSTED FOR PRICE CHANGES

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| CAESAR RODNEY | 677.72 | 725.25 | 723.33 | 798.96 | 793.88 | 793.22 | 828.35 | 845.94 |
| LAKE FOREST | 767.70 | 821.03 | 735.50 | 830.22 | 758.17 | 785.61 | 820.53 | 848.72 |
| DE LA WARR | 769.70 | 850.78 | 867.99 | 959.18 | 1052.40 | 1025.43 | 1149.90 | 1203.82 |
| MILFORD | 775.35 | 792.90 | 779.52 | 832.85 | 808.75 | 808.74 | 789.53 | 819.90 |
| LAUREL | 806.58 | 867.29 | 807.71 | 879.77 | 910.75 | 879.91 | 894.71 | 870.84 |
| SMYRNA | 740.52 | 797.74 | 731.77 | 767.99 | 776.64 | 781.18 | 816.25 | 856.67 |
| WOODBRIDGE | 700.36 | 703.34 | 697.87 | 762.26 | 778.46 | 762.46 | 767.12 | 809.13 |
| NC-GUNNING BEDFORD | 754.70 | 808.04 | 757.53 | 827.81 | 827.68 | 844.87 | 859.45 | 914.11 |
| NEWARK | 778.53 | 860.10 | 848.01 | 892.06 | 927.72 | 935.88 | 952.06 | 956.19 |
| DELMAR | 834.47 | 880.72 | 874.57 | 899.17 | 947.69 | 951.76 | 893.30 | 895.15 |
| APPOQUINIMINK | 761.99 | 975.20 | 942.44 | 981.89 | 1033.10 | 1031.42 | 1107.77 | 1118.98 |
| STANTON | 831.92 | 915.18 | 888.15 | 937.48 | 956.69 | 988.04 | 1057.43 | 1106.41 |
| SEAFORD | 796.75 | 825.53 | 767.44 | 803.07 | 778.75 | 800.86 | 842.36 | 856.47 |
| CONRAD | 728.56 | 786.57 | 765.26 | 830.85 | 847.50 | 857.65 | 950.31 | 1028.52 |
| CLAYMONT | 753.21 | 812.52 | 776.47 | 827.98 | 860.39 | 858.77 | 905.66 | 985.97 |
| WILMINGTON | 1090.92 | 1178.98 | 1166.79 | 1240.17 | 1319.95 | 1357.09 | 1367.22 | 1516.65 |
| CAPITAL | 840.89 | 834.93 | 795.87 | 839.99 | 838.55 | 922.20 | 939.60 | 959.99 |
| MARSHALLTON-MCKEAN | 882.38 | 940.05 | 933.61 | 946.76 | 985.79 | 1007.32 | 1009.39 | 1078.35 |
| ALFRED I DUPONT | 916.55 | 1019.44 | 903.88 | 954.90 | 945.26 | 956.[illegible] | 1022.60 | 1087.46 |
| MOUNT PLEASANT | 869.66 | 916.45 | 908.31 | 946.25 | 1007.65 | 992.57 | 1066.44 | 1101.43 |
| INDIAN RIVER | 781.80 | 766.16 | 739.44 | 820.24 | 814.06 | 854.97 | 875.66 | 900.67 |
| CAPE HENLOPEN | 804.63 | 865.73 | 859.50 | 935.63 | 878.99 | 868.65 | 883.95 | 997.99 |
| ALEXIS I DUPONT | 1051.40 | 1187.87 | 1201.47 | 1276.27 | 1314.61 | 1214.88 | 1215.83 | 1189.95 |

STATISTICS FOR TABLE 27

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 197 |
|---|---|---|---|---|---|---|---|---|
| MEAN | 813.75 | 875.30 | 847.14 | 903.99 | 920.15 | 925.21 | 957.19 | 998. |
| MINIMUM | 677.72 | 703.34 | 697.87 | 762.26 | 758.17 | 762.46 | 767.12 | 809. |
| MAXIMUM | 1090.92 | 1187.87 | 1201.47 | 1276.26 | 1319.96 | 1357.09 | 1367.22 | 1516. |
| RANGE | 413.19 | 484.53 | 503.60 | 514.00 | 561.79 | 594.63 | 600.10 | 707. |
| MAX/MIN | 1.61 | 1.69 | 1.72 | 1.67 | 1.74 | 1.78 | 1.78 | 1. |
| STANDARD DEVIATION | 98.91 | 122.36 | 128.64 | 129.36 | 152.67 | 142.63 | 142.08 | 165. |
| COEFF. OF VAR. | 0.12 | 0.14 | 0.15 | 0.14 | 0.17 | 0.15 | 0.16 | 0. |
| SIMPLE CORR(FULL VAL | 0.722 | 0.644 | 0.656 | 0.632 | 0.557 | 0.499 | 0.437 | 0.4 |
| (SIGNIFICANCE LEVEL) | (.001) | (.001) | (.001) | (.001) | (.003) | (.008) | (.019) | (.01 |
| BETA (FULL VALUE) | 0.6471 | 0.8280 | 0.9779 | 1.1197 | 1.1774 | 1.1014 | 1.0834 | 1.21 |
| STANDARD ERROR | 0.1182 | 0.2016 | 0.2451 | 0.3216 | 0.4388 | 0.5188 | 0.6526 | 0.75 |

Note: Deflated by the State and local government component of the GNP deflator (Source: Report of the President, 1978, Table B-3, p. 261).

TABLE 28 INSTRUCTIONAL EXPENDITURES PER STUDENT

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| CAESAR RODNEY | 442.16 | 499.44 | 530.91 | 610.83 | 645.19 | 682.44 | 762.98 | 809.08 |
| LAKE FOREST | 463.69 | 527.34 | 500.25 | 578.06 | 595.24 | 667.77 | 745.35 | 792.66 |
| DE LA WARR | 515.16 | 591.52 | 657.49 | 762.06 | 831.52 | 898.69 | 1034.44 | 1149.37 |
| MILFORD | 454.98 | 520.78 | 541.80 | 631.81 | 625.30 | 674.50 | 704.68 | 750.15 |
| LAUREL | 482.75 | 570.74 | 565.61 | 653.88 | 684.49 | 697.64 | 756.99 | 792.22 |
| SMYRNA | 476.34 | 542.83 | 516.74 | 588.08 | 616.53 | 644.97 | 735.14 | 793.71 |
| WOODBRIDGE | 429.52 | 454.60 | 488.93 | 554.52 | 621.89 | 639.31 | 673.28 | 735.35 |
| NC-GUNNING BEDFORD | 503.30 | 568.93 | 555.76 | 647.69 | 682.05 | 738.91 | 806.22 | 892.15 |
| NEWARK | 521.74 | 602.81 | 622.33 | 710.03 | 770.79 | 851.11 | 931.44 | 983.75 |
| DELMAR | 458.60 | 506.65 | 543.21 | 583.19 | 671.01 | 706.84 | 696.43 | 749.98 |
| APPOQUINIMINK | 439.32 | 628.78 | 638.12 | 716.35 | 767.43 | 843.19 | 962.45 | 998.33 |
| STANTON | 542.00 | 625.13 | 661.58 | 745.42 | 799.24 | 877.89 | 977.90 | 1088.18 |
| SEAFORD | 483.35 | 540.89 | 548.25 | 595.26 | 623.65 | 687.78 | 746.44 | 806.15 |
| CONRAD | 503.61 | 567.73 | 589.35 | 670.03 | 720.59 | 774.32 | 879.07 | 1001.31 |
| CLAYMONT | 499.17 | 563.01 | 575.29 | 655.08 | 700.37 | 713.90 | 841.32 | 944.18 |
| WILMINGTON | 742.96 | 870.36 | 897.68 | 1017.28 | 1128.49 | 1234.39 | 1274.94 | 1507.23 |
| CAPITAL | 522.41 | 572.51 | 578.51 | 650.51 | 697.99 | 780.60 | 864.45 | 931.49 |
| MARSHALLTON-MCKEAN | 560.75 | 629.59 | 642.94 | 750.46 | 812.11 | 881.98 | 950.63 | 1040.19 |
| ALFRED I DUPONT | 628.71 | 743.49 | 677.22 | 779.09 | 822.59 | 895.09 | 1003.23 | 1115.50 |
| MOUNT PLEASANT | 594.55 | 661.75 | 699.92 | 781.28 | 847.66 | 910.65 | 966.89 | 1075.06 |
| INDIAN RIVER | 463.01 | 506.76 | 525.41 | 597.61 | 635.60 | 708.94 | 784.36 | 825.81 |
| CAPE HENLOPEN | 506.02 | 589.48 | 623.42 | 727.77 | 714.78 | 760.16 | 837.37 | 939.54 |
| ALEXIS I DUPONT | 612.08 | 768.02 | 777.15 | 915.91 | 1034.26 | 978.81 | 1000.97 | 1042.94 |

STATISTICS FOR TABLE 28

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| MEAN | 515.05 | 593.61 | 606.86 | 692.27 | 741.25 | 793.47 | 866.82 | 946.28 |
| MINIMUM | 429.52 | 454.60 | 498.93 | 554.52 | 595.24 | 639.31 | 673.28 | 735.35 |
| MAXIMUM | 742.96 | 870.36 | 897.68 | 1017.28 | 1128.48 | 1234.39 | 1274.94 | 1507.23 |
| RANGE | 313.44 | 415.76 | 408.75 | 462.76 | 533.24 | 595.08 | 601.66 | 771.88 |
| MAX/MIN | 1.73 | 1.91 | 1.84 | 1.83 | 1.90 | 1.93 | 1.89 | 2.05 |
| STANDARD DEVIATION | 73.29 | 95.18 | 95.22 | 111.77 | 132.62 | 137.96 | 142.75 | 177.72 |
| COEFF. OF VAR. | 0.14 | 0.16 | 0.16 | 0.16 | 0.18 | 0.17 | 0.16 | 0.19 |
| SIMPLE CORR(FULL VAL | 0.529 | 0.549 | 0.529 | 0.532 | 0.563 | 0.473 | 0.409 | 0.394 |
| (SIGNIFICANCE LEVEL) | (.005) | (.003) | (.005) | (.004) | (.003) | (.011) | (.026) | (.032) |
| BETA (FULL VALUE) | 0.4596 | 0.6214 | 0.5830 | 0.7080 | 0.7874 | 0.6546 | 0.5416 | 0.5842 |
| STANDARD ERROR | 0.1610 | 0.2063 | 0.2041 | 0.2457 | 0.2519 | 0.2663 | 0.2641 | 0.2977 |

Note: (Source: Report of Educational Statistics)

TABLE 29 INSTRUCTIONAL EXPENDITURES PER STUDENT -- ADJUSTED FOR PRICE CHANGES

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| CAESAR RODNEY | 505.90 | 531.32 | 530.91 | 569.27 | 562.99 | 543.47 | 569.82 | 573.81 |
| LAKE FOREST | 530.53 | 561.00 | 500.25 | 538.73 | 519.41 | 537.66 | 556.65 | 562.17 |
| DE LA WARR | 589.43 | 629.27 | 657.49 | 710.21 | 725.58 | 723.58 | 772.55 | 815.16 |
| MILFORD | 520.58 | 554.02 | 541.80 | 588.82 | 545.64 | 543.07 | 526.27 | 532.02 |
| LAUREL | 552.35 | 607.17 | 565.61 | 609.39 | 597.28 | 561.70 | 565.34 | 561.86 |
| SMYRNA | 545.01 | 577.47 | 516.74 | 548.07 | 537.98 | 519.30 | 549.02 | 562.91 |
| WOODBRIDGE | 491.44 | 483.62 | 488.93 | 516.79 | 542.66 | 514.74 | 502.82 | 521.52 |
| NC-GUNNING BEDFORD | 575.86 | 605.25 | 555.76 | 603.63 | 595.16 | 594.93 | 602.11 | 632.73 |
| NEWARK | 596.95 | 641.29 | 622.33 | 661.72 | 672.60 | 685.27 | 695.62 | 697.70 |
| DELMAR | 524.71 | 538.99 | 543.21 | 543.52 | 585.83 | 569.11 | 520.11 | 531.90 |
| APPOQUINIMINK | 502.65 | 668.92 | 638.12 | 667.62 | 669.66 | 678.90 | 718.79 | 708.03 |
| STANTON | 620.13 | 665.04 | 661.58 | 624.70 | 697.42 | 706.84 | 730.32 | 771.76 |
| SEAFORD | 553.03 | 575.41 | 548.25 | 554.77 | 544.20 | 553.77 | 557.46 | 571.74 |
| CONRAD | 576.21 | 603.97 | 589.35 | 624.45 | 628.78 | 623.44 | 656.51 | 710.15 |
| CLAYMONT | 571.13 | 598.95 | 575.29 | 610.51 | 611.14 | 574.80 | 628.32 | 669.63 |
| WILMINGTON | 850.07 | 925.92 | 897.68 | 948.07 | 984.72 | 993.87 | 952.16 | 1068.95 |
| CAPITAL | 597.72 | 609.06 | 578.51 | 606.26 | 609.07 | 628.50 | 645.59 | 660.63 |
| MARSHALLTON-MCKEAN | 641.59 | 669.78 | 642.94 | 699.40 | 708.65 | 710.13 | 709.96 | 737.72 |
| ALFRED I DUPONT | 719.35 | 790.94 | 677.22 | 726.08 | 717.79 | 720.69 | 749.24 | 791.13 |
| MOUNT PLEASANT | 680.26 | 703.99 | 699.92 | 728.13 | 739.67 | 733.21 | 722.10 | 762.45 |
| INDIAN RIVER | 529.76 | 539.10 | 525.41 | 556.95 | 554.62 | 570.80 | 585.78 | 585.68 |
| CAPE HENLOPEN | 578.97 | 627.11 | 623.42 | 678.25 | 623.72 | 612.05 | 625.37 | 666.34 |
| ALEXIS I DUPONT | 700.32 | 817.04 | 777.15 | 853.60 | 902.49 | 788.09 | 747.55 | 739.68 |

STATISTICS FOR TABLE 29

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| MEAN | 589.30 | 631.50 | 606.86 | 645.17 | 646.82 | 638.86 | 647.36 | 671.12 |
| MINIMUM | 491.44 | 483.62 | 488.93 | 516.79 | 519.41 | 514.74 | 502.82 | 521.52 |
| MAXIMUM | 850.07 | 925.91 | 897.68 | 948.07 | 984.71 | 993.87 | 952.16 | 1068.96 |
| RANGE | 358.63 | 442.30 | 408.75 | 431.28 | 465.31 | 479.13 | 449.34 | 547.43 |
| MAX/MIN | 1.73 | 1.91 | 1.84 | 1.83 | 1.90 | 1.93 | 1.89 | 2.05 |
| STANDARD DEVIATION | 83.86 | 101.26 | 95.22 | 104.17 | 115.72 | 111.08 | 106.61 | 126.04 |
| COEFF. OF VAR. | 0.14 | 0.16 | 0.16 | 0.16 | 0.18 | 0.17 | 0.16 | 0.19 |
| SIMPLE CORR(FULL VAL | 0.529 | 0.549 | 0.529 | 0.532 | 0.563 | 0.473 | 0.409 | 0.394 |
| (SIGNIFICANCE LEVEL) | (.005) | (.003) | (.005) | (.004) | (.003) | (.011) | (.026) | (.032) |
| BETA (FULL VALUE) | 0.4017 | 0.5841 | 0.5830 | 0.7597 | 0.9024 | 0.8130 | 0.7252 | 0.8237 |
| STANDARD ERROR | 0.1230 | 0.1823 | 0.2041 | 0.2829 | 0.3308 | 0.4108 | 0.4735 | 0.5919 |

Note: Deflated by the State and local government component of the GNP deflator (Source: Economic Report of the President, 1978, Table B-3, p. 261).

TABLE 30 TRANSPORTATION EXPENDITURES PER STUDENT

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| CAESAR RODNEY | 37.60 | 34.46 | 35.18 | 50.13 | 58.05 | 67.10 | 78.77 | 92.58 |
| LAKE FOREST | 57.38 | 59.52 | 60.28 | 84.00 | 92.69 | 107.50 | 116.33 | 134.03 |
| DE LA WARR | 20.78 | 29.24 | 31.87 | 37.07 | 49.60 | 62.36 | 74.59 | 86.74 |
| MILFORD | 52.75 | 61.44 | 64.10 | 81.42 | 92.91 | 108.12 | 117.40 | 136.28 |
| LAUREL | 50.44 | 53.28 | 56.55 | 77.14 | 83.82 | 94.98 | 103.04 | 96.16 |
| SMYRNA | 55.06 | 53.84 | 62.30 | 71.77 | 78.93 | 90.35 | 98.26 | 109.39 |
| WOODBRIDGE | 67.08 | 75.04 | 72.11 | 98.13 | 112.83 | 128.82 | 144.42 | 156.70 |
| NC-GUNNING BEDFORD | 25.64 | 34.06 | 43.82 | 53.75 | 56.37 | 63.34 | 74.47 | 86.61 |
| NEWARK | 40.17 | 47.33 | 52.33 | 57.07 | 64.32 | 61.59 | 63.64 | 73.92 |
| DELMAR | 92.09 | 93.11 | 94.15 | 122.80 | 138.16 | 155.84 | 166.41 | 162.58 |
| APPOQUINIMINK | 66.03 | 70.04 | 66.91 | 70.65 | 93.82 | 110.45 | 132.60 | 148.44 |
| STANTON | 31.55 | 39.35 | 39.11 | 41.93 | 43.11 | 55.06 | 67.42 | 86.29 |
| SEAFORD | 57.70 | 50.29 | 60.32 | 70.50 | 88.39 | 101.80 | 109.76 | 126.32 |
| CONRAD | 11.90 | 15.03 | 13.26 | 15.15 | 19.16 | 22.73 | 30.28 | 35.52 |
| CLAYMONT | 5.04 | 4.99 | 5.29 | 5.19 | 5.75 | 6.51 | 7.36 | 8.55 |
| WILMINGTON | 4.51 | 5.71 | 6.38 | 8.10 | 8.81 | 9.70 | 14.06 | 15.09 |
| CAPITAL | 49.05 | 51.25 | 48.34 | 58.57 | 52.29 | 77.69 | 86.79 | 97.78 |
| MARSHALLTON-MCKEAN | 37.27 | 43.49 | 45.75 | 49.43 | 59.58 | 65.67 | 76.98 | 91.54 |
| ALFRED I DUPONT | 32.24 | 32.65 | 39.74 | 34.44 | 40.01 | 32.68 | 36.56 | 47.31 |
| MOUNT PLEASANT | 19.22 | 25.56 | 27.09 | 30.27 | 32.98 | 36.80 | 37.66 | 55.48 |
| INDIAN RIVER | 72.18 | 75.40 | 77.28 | 106.30 | 122.38 | 137.96 | 156.19 | 176.58 |
| CAPE HENLOPEN | 58.84 | 62.64 | 64.47 | 82.06 | 91.72 | 106.07 | 120.50 | 136.18 |
| ALEXIS I DUPONT | 62.42 | 69.60 | 76.00 | 69.58 | 93.50 | 102.23 | 105.69 | 113.98 |

STATISTICS FOR TABLE 30

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| MEAN | 43.78 | 47.27 | 49.68 | 59.80 | 68.66 | 78.49 | 87.79 | 98.87 |
| MINIMUM | 4.51 | 4.99 | 5.29 | 5.19 | 5.75 | 6.51 | 7.36 | 8.55 |
| MAXIMUM | 92.09 | 93.11 | 94.15 | 122.80 | 138.16 | 155.84 | 166.41 | 176.58 |
| RANGE | 87.58 | 88.12 | 88.86 | 117.61 | 132.41 | 149.33 | 159.05 | 168.03 |
| MAX/MIN | 20.42 | 18.66 | 17.80 | 23.66 | 24.03 | 23.94 | 22.61 | 20.65 |
| STANDARD DEVIATION | 22.67 | 22.72 | 22.93 | 30.28 | 35.08 | 40.20 | 43.63 | 45.69 |
| COEFF. OF VAR. | 0.52 | 0.48 | 0.46 | 0.51 | 0.51 | 0.51 | 0.50 | 0.46 |
| SIMPLE CORR(FULL VAL<br>(SIGNIFICANCE LEVEL) | 0.139<br>(.262) | 0.152<br>(.244) | 0.178<br>(.209) | 0.038<br>(.481) | -0.004<br>(.493) | -0.061<br>(.390) | -0.092<br>(.338) | -0.084<br>(.352) |
| BETA (FULL VALUE)<br>STANDARD ERROR | 0.0376<br>0.0581 | 0.0412<br>0.0582 | 0.0472<br>0.0570 | 0.0139<br>0.0785 | 0.0016<br>0.0806 | -0.0247<br>0.0879 | -0.0371<br>0.0880 | -0.0320<br>0.0830 |

Note: (Source: Report of Educational Statistics)

TABLE 31 TRANSPORTATION EXPENDITURES PER STUDENT -- ADJUSTED FOR PRICE CHANGES

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| CAESAR RODNEY | 43.02 | 36.66 | 35.18 | 46.72 | 50.65 | 54.03 | 58.82 | 65.66 |
| LAKE FOREST | 65.65 | 63.32 | 60.28 | 78.28 | 80.88 | 86.55 | 86.98 | 95.06 |
| DE LA WARR | 23.78 | 31.10 | 31.87 | 34.55 | 43.28 | 50.21 | 55.70 | 61.52 |
| MILFORD | 60.35 | 65.36 | 64.10 | 75.88 | 81.08 | 87.06 | 87.68 | 96.65 |
| LAUREL | 57.71 | 56.68 | 56.55 | 71.89 | 73.14 | 76.47 | 76.96 | 88.20 |
| SMYRNA | 63.00 | 57.27 | 62.30 | 66.89 | 68.88 | 72.74 | 73.38 | 77.58 |
| WOODBRIDGE | 76.75 | 79.83 | 72.11 | 91.45 | 98.45 | 103.72 | 107.86 | 111.13 |
| NC-GUNNING BEDFORD | 29.34 | 36.23 | 43.82 | 50.09 | 49.19 | 51.00 | 55.61 | 61.43 |
| NEWARK | 45.96 | 50.35 | 52.33 | 53.19 | 56.13 | 49.59 | 47.53 | 52.42 |
| DELMAR | 105.36 | 99.05 | 94.15 | 114.45 | 120.56 | 125.47 | 124.28 | 115.30 |
| APPOQUINIMINK | 75.54 | 74.51 | 66.91 | 65.85 | 81.86 | 88.93 | 99.03 | 105.28 |
| STANTON | 36.10 | 41.86 | 39.11 | 39.08 | 37.62 | 44.33 | 50.35 | 61.20 |
| SEAFORD | 66.02 | 53.50 | 60.32 | 65.70 | 77.13 | 81.96 | 81.97 | 89.59 |
| CONRAD | 13.62 | 15.99 | 13.26 | 14.12 | 16.72 | 18.30 | 22.62 | 25.19 |
| CLAYMONT | 5.77 | 5.31 | 5.29 | 4.84 | 5.02 | 5.25 | 5.50 | 6.06 |
| WILMINGTON | 5.16 | 6.07 | 6.38 | 7.55 | 7.69 | 7.81 | 10.50 | 10.70 |
| CAPITAL | 56.12 | 54.52 | 48.34 | 54.59 | 45.63 | 62.55 | 64.81 | 69.35 |
| MARSHALLTON-MCKEAN | 42.64 | 46.26 | 45.75 | 46.06 | 51.99 | 52.87 | 57.49 | 64.93 |
| ALFRED I DUPONT | 36.89 | 34.73 | 39.74 | 32.10 | 34.91 | 26.31 | 27.30 | 33.55 |
| MOUNT PLEASANT | 21.99 | 27.19 | 27.09 | 28.21 | 28.77 | 29.63 | 28.12 | 39.35 |
| INDIAN RIVER | 82.59 | 80.22 | 77.28 | 99.07 | 106.79 | 111.08 | 116.65 | 125.24 |
| CAPE HENLOPEN | 67.32 | 66.64 | 64.47 | 76.48 | 80.04 | 85.41 | 89.99 | 96.58 |
| ALEXIS I DUPONT | 71.41 | 74.04 | 76.00 | 64.85 | 81.59 | 82.31 | 78.93 | 80.84 |

STATISTICS FOR TABLE 31

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| MEAN | 50.09 | 50.29 | 49.68 | 55.73 | 59.91 | 63.20 | 65.56 | 70.12 |
| MINIMUM | 5.16 | 5.31 | 5.29 | 4.84 | 5.02 | 5.24 | 5.50 | 6.06 |
| MAXIMUM | 105.37 | 99.05 | 94.15 | 114.45 | 120.56 | 125.48 | 124.28 | 125.23 |
| RANGE | 100.21 | 93.74 | 88.86 | 109.61 | 115.54 | 120.23 | 118.78 | 119.17 |
| MAX/MIN | 20.42 | 18.66 | 17.80 | 23.66 | 24.03 | 23.94 | 22.61 | 20.65 |
| STANDARD DEVIATION | 25.94 | 24.17 | 22.93 | 28.22 | 30.61 | 32.37 | 32.58 | 32.40 |
| COEFF. OF VAR. | 0.52 | 0.48 | 0.46 | 0.51 | 0.51 | 0.51 | 0.50 | 0.46 |
| SIMPLE CORR(FULL VAL | 0.139 | 0.152 | 0.178 | 0.038 | -0.004 | -0.061 | -0.092 | -0.084 |
| (SIGNIFICANCE LEVEL) | (.262) | (.244) | (.209) | (.481) | (.493) | (.390) | (.338) | (.352) |
| BETA (FULL VALUE) | 0.0329 | 0.0387 | 0.0472 | 0.0149 | 0.0018 | -0.0307 | -0.0497 | -0.0451 |
| STANDARD ERROR | 0.0444 | 0.0514 | 0.0570 | 0.0904 | 0.1059 | 0.1356 | 0.1578 | 0.1650 |

Note: Deflated by the State and local government component of the GNP deflator (Source: Economic Report of the President, 1978, Table B-3, p. 261).

TABLE 32 CURRENT EXPENDITURES FOR PLANT OPPERATIONS PER STUDENT

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| CAESAR RODNEY | 56.23 | 71.03 | 73.78 | 81.99 | 83.78 | 98.97 | 108.34 | 120.95 |
| LAKE FOREST | 79.06 | 84.48 | 86.82 | 94.67 | 98.05 | 107.66 | 122.97 | 130.47 |
| DE LA WARR | 67.47 | 78.12 | 83.05 | 81.34 | 155.32 | 141.72 | 196.10 | 162.47 |
| MILFORD | 53.75 | 66.87 | 80.14 | 84.21 | 95.20 | 113.60 | 116.75 | 141.80 |
| LAUREL | 74.09 | 76.90 | 76.41 | 118.41 | 102.49 | 123.51 | 131.80 | 152.05 |
| SMYRNA | 55.77 | 73.71 | 81.79 | 76.05 | 108.03 | 143.51 | 147.64 | 176.39 |
| WOODBRIDGE | 65.39 | 70.74 | 79.28 | 88.01 | 82.93 | 98.31 | 109.20 | 118.56 |
| NC-GUNNING BEDFORD | 59.79 | 69.20 | 78.05 | 88.01 | 100.26 | 124.96 | 135.47 | 157.53 |
| NEWARK | 57.81 | 37.05 | 77.43 | 91.10 | 101.77 | 127.33 | 133.36 | 142.41 |
| DELMAR | 94.26 | 101.70 | 106.47 | 109.41 | 114.80 | 146.73 | 146.60 | 146.03 |
| APPOQUINIMINK | 71.53 | 91.10 | 117.95 | 98.18 | 74.81 | 113.37 | 149.12 | 163.45 |
| STANTON | 75.06 | 94.37 | 88.90 | 101.83 | 119.49 | 148.53 | 175.77 | 200.26 |
| SEAFORD | 77.06 | 79.06 | 79.52 | 90.06 | 89.59 | 106.41 | 108.05 | 125.10 |
| CONRAD | 50.04 | 36.47 | 48.17 | 56.47 | 101.49 | 109.50 | 130.03 | 161.70 |
| CLAYMONT | 84.85 | 101.92 | 106.03 | 128.48 | 154.68 | 202.15 | 201.12 | 218.65 |
| WILMINGTON | 80.83 | 90.04 | 101.59 | 124.97 | 148.18 | 190.17 | 215.44 | 249.56 |
| CAPITAL | 66.98 | 74.76 | 78.42 | 83.95 | 90.11 | 125.12 | 137.57 | 149.24 |
| MARSHALLTON-MCKEAN | 78.56 | 87.46 | 97.10 | 112.36 | 129.77 | 161.99 | 166.20 | 181.01 |
| ALFRED I DUPONT | 81.70 | 100.37 | 100.06 | 112.32 | 128.24 | 154.39 | 184.96 | 201.55 |
| MOUNT PLEASANT | 64.10 | 76.71 | 87.85 | 101.61 | 115.93 | 131.37 | 165.92 | 178.62 |
| INDIAN RIVER | 52.60 | 67.43 | 66.32 | 76.61 | 78.43 | 98.21 | 101.13 | 112.72 |
| CAPE HENLOPEN | 73.26 | 79.24 | 84.85 | 78.05 | 99.60 | 113.30 | 117.21 | 163.73 |
| ALEXIS I DUPONT | 117.16 | 136.59 | 162.20 | 192.75 | 162.55 | 213.38 | 220.74 | 245.49 |

STATISTICS FOR TABLE 32

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| MEAN | 71.19 | 80.23 | 88.79 | 98.73 | 110.24 | 134.53 | 148.76 | 166.08 |
| MINIMUM | 50.04 | 36.47 | 48.17 | 56.47 | 74.81 | 98.21 | 101.13 | 112.72 |
| MAXIMUM | 117.15 | 136.59 | 162.20 | 192.75 | 162.55 | 213.38 | 220.74 | 249.56 |
| RANGE | 67.11 | 100.12 | 114.03 | 136.28 | 87.74 | 115.17 | 119.61 | 136.84 |
| MAX/MIN | 2.34 | 3.75 | 3.37 | 3.41 | 2.17 | 2.17 | 2.18 | 2.21 |
| STANDARD DEVIATION | 15.37 | 20.80 | 21.79 | 26.89 | 25.56 | 32.51 | 35.83 | 37.84 |
| COEFF. OF VAR. | 0.22 | 0.26 | 0.25 | 0.27 | 0.23 | 0.24 | 0.24 | 0.23 |
| SIMPLE CORR(FULL VAL<br>(SIGNIFICANCE LEVEL) | 0.611<br>(.001) | 0.545<br>(.004) | 0.613<br>(.001) | 0.575<br>(.002) | 0.423<br>(.022) | 0.458<br>(.014) | 0.376<br>(.038) | 0.565<br>(.003) |
| BETA (FULL VALUE)<br>STANDARD ERROR | 0.1114<br>0.0315 | 0.1348<br>0.0452 | 0.1546<br>0.0435 | 0.1841<br>0.0571 | 0.1140<br>0.0532 | 0.1496<br>0.0633 | 0.1254<br>0.0673 | 0.1784<br>0.0569 |

Note: (Source: Report of Educational Statistics)

TABLE 33 PLANT OPPERATIONS PER STUDENT -- ADJUSTED FOR PRICE CHANGES

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| CAESAR RODNEY | 64.34 | 75.56 | 73.78 | 76.42 | 73.11 | 79.69 | 80.91 | 85.78 |
| LAKE FOREST | 90.46 | 89.87 | 86.82 | 88.23 | 85.56 | 86.68 | 91.83 | 92.53 |
| DE LA WARR | 77.20 | 83.11 | 83.05 | 75.80 | 135.53 | 114.11 | 146.46 | 115.23 |
| MILFORD | 61.49 | 71.14 | 80.14 | 76.48 | 83.08 | 91.47 | 87.19 | 100.57 |
| LAUREL | 84.77 | 81.81 | 76.41 | 110.35 | 89.43 | 99.45 | 98.43 | 107.84 |
| SMYRNA | 63.81 | 78.42 | 81.79 | 70.87 | 94.27 | 115.55 | 110.26 | 125.10 |
| WOODBRIDGE | 74.82 | 75.26 | 79.28 | 82.03 | 72.37 | 79.16 | 81.56 | 84.08 |
| NC-GUNNING BEDFORD | 68.42 | 73.62 | 78.05 | 82.03 | 87.49 | 100.61 | 101.18 | 111.73 |
| NEWARK | 66.14 | 39.41 | 77.43 | 84.90 | 88.81 | 102.52 | 99.60 | 101.00 |
| DELMAR | 107.85 | 108.19 | 106.47 | 101.96 | 100.18 | 118.14 | 109.48 | 103.57 |
| APPOQUINIMINK | 81.85 | 96.92 | 117.95 | 91.50 | 65.28 | 91.28 | 111.37 | 115.92 |
| STANTON | 85.88 | 100.39 | 88.90 | 94.90 | 104.27 | 119.59 | 131.27 | 142.03 |
| SEAFORD | 88.17 | 84.11 | 79.52 | 93.93 | 78.18 | 85.68 | 80.70 | 88.72 |
| CONRAD | 57.25 | 38.80 | 48.17 | 52.62 | 88.56 | 88.16 | 97.11 | 114.68 |
| CLAYMONT | 97.08 | 108.43 | 106.03 | 119.74 | 134.97 | 162.76 | 150.20 | 155.07 |
| WILMINGTON | 92.48 | 95.78 | 101.59 | 116.46 | 129.30 | 153.12 | 160.89 | 176.99 |
| CAPITAL | 76.64 | 79.53 | 78.42 | 78.24 | 78.63 | 100.74 | 102.74 | 105.84 |
| MARSHALLTON-MCKEAN | 89.89 | 93.04 | 97.10 | 104.72 | 113.24 | 130.43 | 124.12 | 128.38 |
| ALFRED I DUPONT | 93.47 | 106.78 | 100.06 | 104.68 | 111.90 | 124.31 | 138.13 | 142.94 |
| MOUNT PLEASANT | 73.35 | 81.61 | 87.85 | 94.69 | 101.16 | 105.78 | 123.91 | 126.68 |
| INDIAN RIVER | 60.18 | 71.73 | 66.32 | 71.40 | 68.44 | 79.07 | 75.53 | 79.95 |
| CAPE HENLOPEN | 83.82 | 84.29 | 84.85 | 72.74 | 86.91 | 91.22 | 87.54 | 130.30 |
| ALEXIS I DUPONT | 134.05 | 145.31 | 162.20 | 179.64 | 141.84 | 171.80 | 164.85 | 174.11 |

STATISTICS FOR TABLE 33

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| MEAN | 81.45 | 85.35 | 88.79 | 92.01 | 96.20 | 108.32 | 111.10 | 117.79 |
| MINIMUM | 57.25 | 38.80 | 48.17 | 52.63 | 65.28 | 79.07 | 75.63 | 79.94 |
| MAXIMUM | 134.04 | 145.31 | 162.20 | 179.64 | 141.84 | 171.80 | 164.85 | 176.99 |
| RANGE | 76.78 | 106.51 | 114.03 | 127.01 | 76.56 | 92.73 | 89.33 | 97.05 |
| MAX/MIN | 2.34 | 3.75 | 3.37 | 3.41 | 2.17 | 2.17 | 2.18 | 2.21 |
| STANDARD DEVIATION | 17.59 | 22.13 | 21.79 | 25.06 | 22.30 | 26.18 | 26.76 | 26.84 |
| COEFF. OF VAR. | 0.22 | 0.26 | 0.25 | 0.27 | 0.23 | 0.24 | 0.24 | 0.23 |
| SIMPLE CORR(FULL VAL | 0.611 | 0.545 | 0.613 | 0.575 | 0.423 | 0.458 | 0.376 | 0.565 |
| (SIGNIFICANCE LEVEL) | (.001) | (.004) | (.001) | (.002) | (.022) | (.014) | (.038) | (.003) |
| BETA (FULL VALUE) | 0.0974 | 0.1267 | 0.1546 | 0.1975 | 0.1306 | 0.1858 | 0.1679 | 0.2515 |
| STANDARD ERROR | 0.0241 | 0.0399 | 0.0435 | 0.0657 | 0.0699 | 0.0976 | 0.1207 | 0.1131 |

Note: Deflated by the State and local government component of the GNP deflator (Source: Economic Report of the President, 1978, Table B-3, p. 261).

TABLE 34 CURRENT EXPENDITURES FOR PLANT MAINTENANCE PER STUDENT

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| CAESAR RODNEY | 7.93 | 10.73 | 12.57 | 19.83 | 20.75 | 17.67 | 27.05 | 28.19 |
| LAKE FOREST | 20.80 | 41.99 | 28.12 | 72.23 | 17.75 | 21.18 | 29.68 | 39.24 |
| DE LA WARR | 8.21 | 20.08 | 16.03 | 41.90 | 52.59 | 41.52 | 93.98 | 129.90 |
| MILFORD | 22.24 | 16.21 | 9.98 | 19.11 | 24.48 | 15.51 | 24.74 | 23.57 |
| LAUREL | 14.47 | 16.55 | 17.82 | 8.86 | 66.06 | 60.14 | 64.79 | 44.97 |
| SMYRNA | 15.41 | 20.82 | 14.63 | 25.93 | 20.70 | 19.64 | 27.34 | 31.79 |
| WOODBRIDGE | 6.32 | 16.01 | 11.81 | 11.24 | 14.80 | 7.60 | 17.20 | 25.20 |
| NC-GUNNING BEDFORD | 16.28 | 24.62 | 16.38 | 25.95 | 35.85 | 24.34 | 29.61 | 30.59 |
| NEWARK | 8.67 | 57.78 | 28.73 | 24.78 | 43.35 | 28.40 | 37.94 | 39.90 |
| DELMAR | 9.74 | 16.10 | 24.72 | 29.15 | 33.37 | 23.65 | 45.10 | 24.99 |
| APPOQUINIMINK | 19.08 | 32.81 | 11.79 | 43.36 | 72.65 | 54.95 | 80.98 | 73.87 |
| STANTON | 15.60 | 16.76 | 14.79 | 15.62 | 24.86 | 28.54 | 60.26 | 16.56 |
| SEAFORD | 30.48 | 45.37 | 20.57 | 33.28 | 18.02 | 13.10 | 70.47 | 37.95 |
| CONRAD | 16.16 | 57.62 | 36.17 | 58.32 | 35.94 | 40.39 | 90.44 | 86.68 |
| CLAYMONT | 19.72 | 34.84 | 29.04 | 31.72 | 58.62 | 57.24 | 46.59 | 64.48 |
| WILMINGTON | 28.83 | 36.20 | 37.24 | 44.98 | 57.07 | 55.51 | 80.87 | 88.87 |
| CAPITAL | 23.06 | 25.27 | 26.28 | 31.98 | 31.17 | 34.32 | 18.09 | 20.54 |
| MARSHALLTON-MCKEAN | 9.05 | 33.18 | 38.69 | 15.90 | 34.28 | 17.80 | 34.89 | 43.33 |
| ALFRED I DUPONT | 7.84 | 12.35 | 20.43 | 13.06 | 17.44 | 16.35 | 21.11 | 24.70 |
| MOUNT PLEASANT | 31.90 | 35.99 | 20.41 | 21.75 | 64.01 | 26.66 | 122.34 | 75.83 |
| INDIAN RIVER | 40.32 | 14.63 | 11.61 | 32.48 | 27.37 | 28.73 | 38.82 | 45.85 |
| CAPE HENLOPEN | 13.72 | 21.31 | 18.77 | 51.14 | 28.01 | 23.04 | 19.36 | 36.66 |
| ALEXIS I DUPONT | 30.99 | 35.19 | 48.30 | 41.60 | 71.46 | 47.60 | 115.57 | 70.55 |

STATISTICS FOR TABLE 34

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| MEAN | 18.12 | 27.93 | 22.38 | 31.05 | 37.85 | 30.60 | 52.05 | 48.0 |
| MINIMUM | 6.32 | 10.73 | 9.98 | 8.86 | 14.80 | 7.60 | 17.20 | 16.5 |
| MAXIMUM | 40.32 | 57.78 | 48.30 | 72.23 | 72.65 | 60.14 | 122.34 | 129.9 |
| RANGE | 34.00 | 47.05 | 38.32 | 63.37 | 57.85 | 52.54 | 105.14 | 113.3 |
| MAX/MIN | 6.38 | 5.38 | 4.84 | 8.15 | 4.91 | 7.91 | 7.11 | 7.8 |
| STANDARD DEVIATION | 9.32 | 13.69 | 10.26 | 15.89 | 18.88 | 15.51 | 32.03 | 28.1 |
| COEFF. OF VAR. | 0.51 | 0.49 | 0.46 | 0.51 | 0.50 | 0.51 | 0.62 | 0.5 |
| SIMPLE CORR(FULL VAL<br>(SIGNIFICANCE LEVEL) | 0.475<br>(.011) | 0.100<br>(.324) | 0.578<br>(.002) | 0.228<br>(.148) | 0.324<br>(.066) | 0.167<br>(.223) | 0.299<br>(.083) | 0.17<br>(.219 |
| BETA (FULL VALUE)<br>STANDARD ERROR | 0.0524<br>0.0212 | 0.0164<br>0.0353 | 0.0687<br>0.0211 | 0.0431<br>0.0402 | 0.0644<br>0.0411 | 0.0260<br>0.0335 | 0.0891<br>0.0619 | 0.039<br>0.050 |

Note: (Source: Report of Educational Statistics)

TABLE 35 PLANT MAINTENANCE $ PER STUDENT -- ADJUSTED FOR PRICE CHANGES

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| CAESAR RODNEY | 9.07 | 11.42 | 12.57 | 18.48 | 18.11 | 14.23 | 20.21 | 20.00 |
| LAKE FOREST | 23.80 | 44.66 | 28.12 | 67.31 | 15.49 | 17.05 | 22.17 | 27.83 |
| DE LA WARR | 9.39 | 21.37 | 16.03 | 39.05 | 45.89 | 33.43 | 70.19 | 92.12 |
| MILFORD | 25.44 | 17.24 | 9.98 | 17.81 | 21.36 | 12.49 | 18.48 | 16.71 |
| LAUREL | 16.55 | 17.60 | 17.82 | 8.26 | 57.64 | 48.43 | 48.39 | 31.89 |
| SMYRNA | 17.64 | 22.15 | 14.63 | 24.17 | 18.07 | 15.81 | 20.42 | 22.54 |
| WOODBRIDGE | 7.23 | 17.03 | 11.81 | 10.48 | 12.92 | 6.12 | 12.85 | 17.88 |
| NC-GUNNING BEDFORD | 18.62 | 26.19 | 16.38 | 24.18 | 31.28 | 19.59 | 22.11 | 21.69 |
| NEWARK | 9.92 | 61.46 | 28.73 | 23.09 | 37.83 | 22.87 | 28.33 | 28.30 |
| DELMAR | 11.14 | 17.13 | 24.72 | 27.17 | 29.12 | 19.04 | 33.69 | 17.72 |
| APPOQUINIMINK | 21.83 | 34.90 | 11.79 | 40.41 | 63.39 | 44.24 | 60.47 | 52.39 |
| STANTON | 17.85 | 17.83 | 14.79 | 14.55 | 21.69 | 22.98 | 45.00 | 11.74 |
| SEAFORD | 34.87 | 48.27 | 20.57 | 31.02 | 15.73 | 10.55 | 52.63 | 26.91 |
| CONRAD | 18.49 | 61.30 | 36.17 | 54.35 | 31.36 | 32.52 | 67.54 | 61.48 |
| CLAYMONT | 22.56 | 37.07 | 29.04 | 29.56 | 51.15 | 46.09 | 34.79 | 45.73 |
| WILMINGTON | 32.99 | 38.51 | 37.24 | 41.92 | 49.80 | 44.69 | 60.39 | 63.03 |
| CAPITAL | 26.38 | 26.88 | 26.28 | 29.80 | 27.20 | 27.63 | 13.51 | 14.57 |
| MARSHALLTON-MCKEAN | 10.35 | 35.30 | 38.69 | 14.82 | 29.91 | 14.33 | 26.06 | 30.73 |
| ALFRED I DUPONT | 8.97 | 13.13 | 20.43 | 12.17 | 15.21 | 13.16 | 15.76 | 17.51 |
| MOUNT PLEASANT | 36.50 | 38.28 | 20.41 | 20.27 | 55.85 | 21.47 | 91.37 | 53.78 |
| INDIAN RIVER | 46.13 | 15.57 | 11.61 | 30.27 | 23.89 | 23.13 | 28.99 | 32.52 |
| CAPE HENLOPEN | 15.70 | 22.67 | 18.77 | 47.66 | 24.44 | 18.55 | 14.46 | 26.00 |
| ALEXIS I DUPONT | 35.46 | 37.44 | 48.30 | 38.77 | 62.35 | 38.33 | 86.31 | 50.03 |

STATISTICS FOR TABLE 35

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| MEAN | 20.73 | 29.71 | 22.38 | 28.94 | 33.03 | 24.64 | 38.87 | 34.04 |
| MINIMUM | 7.23 | 11.41 | 9.98 | 8.26 | 12.91 | 6.12 | 12.85 | 11.74 |
| MAXIMUM | 46.13 | 61.47 | 48.30 | 67.32 | 63.39 | 48.42 | 91.37 | 92.13 |
| RANGE | 38.90 | 50.05 | 38.32 | 59.06 | 50.48 | 42.30 | 78.52 | 80.38 |
| MAX/MIN | 6.38 | 5.38 | 4.84 | 8.15 | 4.91 | 7.91 | 7.11 | 7.84 |
| STANDARD DEVIATION | 10.66 | 14.56 | 10.26 | 14.81 | 16.47 | 12.49 | 23.92 | 19.94 |
| COEFF. OF VAR. | 0.51 | 0.49 | 0.46 | 0.51 | 0.50 | 0.51 | 0.62 | 0.59 |
| SIMPLE CORR(FULL VAL<br>(SIGNIFICANCE LEVEL) | 0.475<br>(.011) | 0.100<br>(.324) | 0.578<br>(.002) | 0.228<br>(.148) | 0.324<br>(.066) | 0.167<br>(.223) | 0.299<br>(.083) | 0.170<br>(.219) |
| BETA (FULL VALUE)<br>STANDARD ERROR | 0.0458<br>0.0162 | 0.0154<br>0.0312 | 0.0687<br>0.0211 | 0.0462<br>0.0463 | 0.0738<br>0.0540 | 0.0323<br>0.0517 | 0.1193<br>0.1110 | 0.0563<br>0.1004 |

Note: Deflated by the State and local government component of the GNP deflator (Source: Economic Report of the President, 1978, Table B-3, p. 261).

TABLE 36 CAPITAL OUTLAY PER STUDENT

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| CAESAR RODNEY | 79.62 | 19.79 | 12.23 | 16.93 | 18.42 | 12.09 | 18.62 | 15.23 |
| LAKE FOREST | 198.53 | 10.69 | 8.86 | 20.55 | 85.47 | 19.15 | 27.48 | 21.97 |
| DE LA WARR | 77.93 | 34.47 | 43.19 | 51.01 | 30.23 | 36.21 | 73.37 | 20.25 |
| MILFORD | 259.24 | 472.44 | 121.09 | 15.49 | 22.79 | 56.99 | 27.67 | 52.86 |
| LAUREL | 45.63 | 1213.28 | 75.67 | 140.56 | 109.25 | 4.37 | 36.65 | 11.18 |
| SMYRNA | 921.30 | 658.53 | 71.01 | 516.66 | 61.49 | 31.01 | 51.32 | 64.01 |
| WOODBRIDGE | 48.33 | 26.37 | 10.11 | 28.22 | 3.72 | 7.37 | 37.08 | 24.32 |
| NC-GUNNING BEDFORD | 667.65 | 618.02 | 580.71 | 426.15 | 150.55 | 49.08 | 56.45 | 53.56 |
| NEWARK | 834.84 | 1212.82 | 825.99 | 127.81 | 641.27 | 66.16 | 134.91 | 34.00 |
| DELMAR | 19.16 | 27.85 | 0.00 | 12.57 | 481.46 | 39.44 | 20.44 | 38.75 |
| APPOQUINIMINK | 133.75 | 69.48 | 125.03 | 208.83 | 857.91 | 73.34 | 817.76 | 208.34 |
| STANTON | 40.38 | 203.05 | 97.66 | 57.95 | 14.77 | 29.03 | 12.87 | 8.99 |
| SEAFORD | 22.33 | 60.46 | 18.94 | 12.30 | 161.49 | 6.80 | 17.33 | 8.15 |
| CONRAD | 27.43 | 42.02 | 32.35 | 37.18 | 87.70 | 17.85 | 24.83 | 30.57 |
| CLAYMONT | 467.52 | 89.97 | 13.58 | 12.60 | 11.83 | 166.24 | 31.47 | 47.42 |
| WILMINGTON | 322.66 | 387.38 | 332.38 | 691.18 | 255.02 | 161.01 | 68.41 | 47.68 |
| CAPITAL | 118.83 | 61.21 | 25.28 | 82.29 | 44.02 | 102.61 | 171.95 | 74.51 |
| MARSHALLTON-MCKEAN | 8.13 | 37.82 | 304.46 | 308.91 | 71.22 | 19.45 | 9.27 | 14.76 |
| ALFRED I DUPONT | 409.15 | 88.23 | 30.07 | 24.59 | 54.45 | 14.54 | 19.43 | 35.61 |
| MOUNT PLEASANT | 11.04 | 337.56 | 257.07 | 70.16 | 29.80 | 11.36 | 16.62 | 27.64 |
| INDIAN RIVER | 22.40 | 129.32 | 33.40 | 58.97 | 36.68 | 23.10 | 23.22 | 421.28 |
| CAPE HENLOPEN | 33.66 | 31.20 | 21.49 | 123.38 | 25.41 | 1380.63 | 211.40 | 156.38 |
| ALEXIS I DUPONT | 1578.63 | 1731.75 | 687.71 | 151.70 | 59.60 | 110.65 | 573.61 | 405.23 |

STATISTICS FOR TABLE 36

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| MEAN | 276.01 | 328.56 | 162.10 | 138.96 | 144.11 | 106.02 | 107.92 | 79.25 |
| MINIMUM | 8.13 | 10.69 | 0.00 | 12.30 | 3.72 | 4.37 | 9.27 | 8.15 |
| MAXIMUM | 1578.63 | 1731.75 | 825.99 | 691.18 | 857.91 | 1380.63 | 817.76 | 421.28 |
| RANGE | 1570.50 | 1721.06 | 825.99 | 678.88 | 854.19 | 1376.26 | 808.49 | 413.13 |
| MAX/MIN | 194.17 | 162.00 | ******** | 56.19 | 230.62 | 315.93 | 88.22 | 51.69 |
| STANDARD DEVIATION | 392.08 | 469.56 | 234.99 | 181.02 | 219.96 | 281.73 | 196.17 | 115.36 |
| COEFF. OF VAR. | 1.42 | 1.43 | 1.45 | 1.30 | 1.53 | 2.66 | 1.82 | 1.46 |
| SIMPLE CORR(FULL VAL | 0.590 | 0.480 | 0.386 | 0.116 | -0.187 | 0.505 | 0.308 | 0.627 |
| (SIGNIFICANCE LEVEL) | (.002) | (.010) | (.035) | (.299) | (.196) | (.007) | (.076) | (.001) |
| BETA (FULL VALUE) | 2.7452 | 2.6755 | 1.0487 | 0.2503 | -0.4341 | 1.4287 | 0.5612 | 0.6043 |
| STANDARD ERROR | 0.8189 | 1.0682 | 0.5475 | 0.4668 | 0.4967 | 0.5325 | 0.3782 | 0.1637 |

Note: (Source: Report of Educational Statistics)

TABLE 37 CAPITAL OUTLAY PER STUDENT -- ADJUSTED FOR PRICE CHANGES

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| CAESAR RODNEY | 91.10 | 21.05 | 12.23 | 15.77 | 16.08 | 9.73 | 13.91 | 10.80 |
| LAKE FOREST | 227.15 | 11.37 | 8.86 | 19.16 | 74.58 | 15.42 | 20.52 | 15.58 |
| DE LA WARR | 89.17 | 36.67 | 43.19 | 47.54 | 26.38 | 29.15 | 54.80 | 14.36 |
| MILFORD | 296.62 | 502.60 | 121.09 | 14.43 | 19.88 | 45.89 | 20.67 | 37.49 |
| LAUREL | 52.20 | 1290.72 | 75.67 | 131.00 | 95.33 | 3.52 | 27.37 | 7.93 |
| SMYRNA | 1054.12 | 700.56 | 71.01 | 481.51 | 53.66 | 24.97 | 38.33 | 45.40 |
| WOODBRIDGE | 55.30 | 28.05 | 10.11 | 26.30 | 3.25 | 5.93 | 27.69 | 17.25 |
| NC-GUNNING BEDFORD | 763.90 | 657.47 | 580.71 | 397.16 | 131.37 | 39.52 | 42.15 | 37.98 |
| NEWARK | 955.20 | 1290.23 | 825.99 | 119.11 | 559.57 | 53.27 | 100.76 | 24.12 |
| DELMAR | 21.92 | 29.63 | 0.00 | 11.71 | 420.12 | 31.76 | 15.27 | 27.48 |
| APPOQUINIMINK | 153.04 | 73.91 | 125.03 | 194.62 | 748.61 | 59.05 | 610.73 | 147.76 |
| STANTON | 46.20 | 216.01 | 97.66 | 54.01 | 12.89 | 23.37 | 9.61 | 6.37 |
| SEAFORD | 25.55 | 64.32 | 18.94 | 11.47 | 140.92 | 5.48 | 12.94 | 5.78 |
| CONRAD | 31.39 | 44.70 | 32.35 | 34.66 | 76.53 | 14.37 | 18.54 | 21.68 |
| CLAYMONT | 534.92 | 95.71 | 13.58 | 11.74 | 10.33 | 133.85 | 23.50 | 33.63 |
| WILMINGTON | 369.18 | 412.10 | 332.38 | 644.15 | 222.53 | 129.64 | 51.09 | 33.82 |
| CAPITAL | 135.96 | 65.12 | 25.28 | 76.69 | 38.41 | 82.62 | 128.41 | 52.85 |
| MARSHALLTON-MCKEAN | 9.30 | 40.23 | 304.46 | 287.89 | 62.15 | 15.66 | 6.92 | 10.47 |
| ALFRED I DUPONT | 468.13 | 93.86 | 30.07 | 22.92 | 47.51 | 11.71 | 14.51 | 25.25 |
| MOUNT PLEASANT | 12.63 | 359.11 | 257.07 | 65.39 | 26.01 | 9.14 | 12.41 | 19.60 |
| INDIAN RIVER | 25.62 | 137.57 | 33.40 | 54.96 | 32.00 | 18.60 | 17.34 | 298.78 |
| CAPE HENLOPEN | 38.51 | 33.19 | 21.49 | 114.98 | 22.17 | 1111.62 | 157.88 | 110.91 |
| ALEXIS I DUPONT | 1806.21 | 1842.29 | 687.71 | 141.38 | 52.01 | 89.09 | 428.39 | 287.40 |

STATISTICS FOR TABLE 37

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| MEAN | 315.80 | 349.53 | 162.10 | 129.51 | 125.75 | 85.36 | 80.60 | 56.21 |
| MINIMUM | 9.30 | 11.37 | 0.00 | 11.46 | 3.25 | 3.52 | 6.92 | 5.78 |
| MAXIMUM | 1806.21 | 1842.29 | 825.99 | 644.16 | 748.61 | 1111.62 | 610.72 | 298.78 |
| RANGE | 1796.91 | 1830.91 | 825.99 | 632.69 | 745.37 | 1108.10 | 603.80 | 293.00 |
| MAX/MIN | 194.17 | 162.00 | ******** | 56.19 | 230.62 | 315.93 | 88.22 | 51.69 |
| STANDARD DEVIATION | 448.60 | 499.53 | 234.99 | 168.70 | 191.94 | 226.84 | 146.50 | 81.82 |
| COEFF. OF VAR. | 1.42 | 1.43 | 1.45 | 1.30 | 1.53 | 2.66 | 1.82 | 1.46 |
| SIMPLE CORR(FULL VAL<br>(SIGNIFICANCE LEVEL) | 0.590<br>(.002) | 0.480<br>(.010) | 0.386<br>(.035) | 0.116<br>(.299) | -0.187<br>(.196) | 0.505<br>(.007) | 0.308<br>(.076) | 0.627<br>(.001) |
| BETA (FULL VALUE)<br>STANDARD ERROR | 2.3993<br>0.6255 | 2.5150<br>0.9439 | 1.0487<br>0.5475 | 0.2686<br>0.5374 | -0.4975<br>0.6523 | 1.7744<br>0.8214 | 0.7514<br>0.6781 | 0.8521<br>0.3255 |

Note: Deflated by the State and local government component of the GNP deflator (Source: Economic Report of the President, 1978, Table B-3, p. 261).

TABLE 38 ACHIEVEMENT SCORES: TOTAL APTITUDE (4TH GRADE)

| | 1972 | 1973 | 1974 | 1975 | 1976 |
|---|---|---|---|---|---|
| CAESAR RODNEY | 49.80 | 50.60 | 51.60 | 51.90 | 51.70 |
| LAKE FOREST | 48.10 | 47.00 | 49.10 | 47.50 | 47.90 |
| DE LA WARR | 43.10 | 42.30 | 42.50 | 52.00 | 44.90 |
| MILFORD | 46.70 | 46.40 | 46.90 | 48.40 | 51.60 |
| LAUREL | 47.80 | 47.70 | 42.50 | 45.90 | 44.50 |
| SMYRNA | 48.10 | 48.20 | 46.70 | 47.40 | 46.80 |
| WOODBRIDGE | 46.80 | 47.00 | 49.90 | 49.20 | 46.10 |
| NC-GUNNING BEDFORD | 51.00 | 49.90 | 50.00 | 50.00 | 49.80 |
| NEWARK | 52.00 | 52.20 | 52.00 | 52.30 | 52.10 |
| DELMAR | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| APPOQUINIMINK | 50.10 | 48.10 | 47.10 | 48.70 | 47.50 |
| STANTON | 54.70 | 55.20 | 55.00 | 52.30 | 54.40 |
| SEAFORD | 49.40 | 48.80 | 50.30 | 48.80 | 48.40 |
| CONRAD | 50.80 | 49.60 | 50.50 | 50.30 | 48.90 |
| CLAYMONT | 52.80 | 52.50 | 50.80 | 51.40 | 50.00 |
| WILMINGTON | 41.10 | 42.50 | 42.80 | 42.90 | 41.40 |
| CAPITAL | 47.80 | 48.00 | 48.40 | 47.50 | 48.90 |
| MARSHALLTON-MCKEAN | 52.10 | 53.80 | 51.70 | 51.90 | 51.70 |
| ALFRED I DUPONT | 57.80 | 57.40 | 57.20 | 56.60 | 57.50 |
| MOUNT PLEASANT | 56.60 | 56.40 | 55.90 | 54.70 | 53.00 |
| INDIAN RIVER | 48.60 | 48.20 | 47.10 | 48.50 | 48.80 |
| CAPE HENLOPEN | 48.10 | 48.70 | 48.90 | 49.10 | 49.30 |
| ALEXIS I DUPONT | 55.10 | 55.90 | 55.50 | 54.10 | 55.00 |

STATISTICS FOR TABLE 38

| | 1972 | 1973 | 1974 | 1975 | 1976 |
|---|---|---|---|---|---|
| MEAN | 49.92 | 49.84 | 49.66 | 50.06 | 49.56 |
| MINIMUM | 41.10 | 42.30 | 42.50 | 42.90 | 41.40 |
| MAXIMUM | 57.80 | 57.40 | 57.20 | 56.60 | 57.50 |
| RANGE | 16.70 | 15.10 | 14.70 | 13.70 | 16.10 |
| MAX/MIN | 1.41 | 1.36 | 1.35 | 1.32 | 1.39 |
| STANDARD DEVIATION | 4.03 | 4.09 | 4.12 | 3.10 | 3.72 |
| COEFF. OF VAR. | 0.08 | 0.08 | 0.08 | 0.06 | 0.08 |
| SIMPLE CORR(FULL VAL<br>(SIGNIFICANCE LEVEL) | 0.260<br>(.121) | 0.333<br>(.065) | 0.307<br>(.083) | 0.229<br>(.152) | 0.315<br>(.077) |

Table 39

Correlation between Property Wealth and Achievement, 8th Grade, FY 1977

| | |
|---|---|
| Verbal Aptitude | 0.6160<br>(.001) |
| Quantitative Aptitude | 0.5824<br>(.002) |
| Total Aptitude | 0.5998<br>(.001) |
| Reading | 0.6149<br>(.001) |
| Language | 0.6131<br>(.001) |
| Mathematics | 0.5818<br>(.002) |
| Science | 0.6511<br>(.001) |
| Social Studies | 0.6429<br>(.001) |
| Composite Achievement | 0.6352<br>(.001) |

# AN EVALUATION OF THE DELAWARE STATE PUBLIC ELEMENTARY AND SECONDARY EDUCATIONAL EQUALIZATION LAWS

## Volume IV

## Wealth Neutrality and the Demand for Education

Prepared for the Department of Public Instruction to fulfill requirements set forth in PL93-380.

ABSTRACT

Price elasticities for the demand for education are estimated for Delaware school districts. In the context of median voter theory, these estimates are used to examine the difficulties inherent in devising a matching-grant, public-education finance plan which is wealth neutral in the sense that the total elasticity of expenditures with respect to property wealth is zero. Martin Feldstein's model is adapted for the approximately two-thirds of the states like Delaware which have had no experience with matching-grant schemes. Median voter theory is shown to provide a framework through which Feldstein's model can be successfully implemented for such states. We conclude that achieving complete wealth neutrality vis a vis a matching plan is more difficult than Feldstein's findings suggest.

# Wealth Neutrality and the Demand for Education*

## I. Introduction

Due to a series of recent court decisions, systems of public elementary and secondary school finance are currently under legal challenge in many states. As a result, substantial changes are inevitable in the way many state and local governments finance education. Some states have already instituted major changes in their educational finance systems, while many others are seriously considering changes. Unfortunately, policy makers have been severely handicapped. On one hand there is a lack of clear operational signals from the courts regarding legal requirements, and on the other hand there is a lack of empirical analysis of the impact of alternative school finance methods on the distribution of tax burden and on the behavior of the school system itself.

In 1976 the California Supreme Court, in Serrano vs. Priest, while overturning the California educational finance scheme, reaffirmed an earlier decision when it stated that the quality of education must not be a function of local district property wealth. Martin Feldstein (1975), among others, has interpreted "wealth neutrality" in the Serrano sense to mean that the total elasticity of expenditures with respect to property wealth must be zero. Feldstein further argues that even though the behavioral

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responses of wealthier districts may lead to inequities of the kind which prompted Serrano, a state-local matching-grant scheme could be established to bring about any desired degree of wealth neutrality.

A matching-rate plan effects a change in local district expenditures by changing the local district price of education. To satisfy a Serrano type mandate it would presumably be necessary to raise the price of an extra dollar of expenditure on education to wealthy districts, and to lower the price for poorer property-wealth districts. In order to be able to predict the consequences of such a plan, it is necessary to have information about local districts' expenditure responses to the proposed variations in prices, i.e., the price elasticity of demand for public elementary education.

In the present paper, estimates are obtained for the price and income elasticities of the demand for education for school districts in Delaware. In addition to contributing to a growing empirical literature on the estimation of demand elasticities for services provided by the public sector, the estimates are used to examine the difficulties in specifying a matching-rate scheme for public education which is wealth neutralizing. In particular, this paper concentrates on the problems in specifying such a scheme for states like Delaware, one of the approximately two-thirds of the states which have no historical experience with matching-rate schemes.

Median voter theory underlies the estimated price elasticities

presented in this paper. We demonstrate that if this theory is appropriate, states which currently do not have matching-rate schemes can arrive at rough estimates of the price elasticities required to predict the impacts of wealth neutralizing schemes. On the other hand, because Feldstein's model requires price elasticity estimates based on experience with a matching-rate plan, his approach is of little use to the states which currently do not have matching-rate schemes.

We conclude that a District Power Equalization matching-rate scheme would have the possibility of achieving almost complete wealth neutrality in Delaware, a result at variance with Feldstein's conclusions based on Massachusetts data. We also note that Feldstein's estimated elasticities, which differ with those of Helen Ladd, indicate that certain implications of the median voter model are not supported by empirical evidence. This raises fundamental questions relating to 1) the proper way to model the political decision-making process and 2) the ability to fashion wealth neutral matching-rate schemes for states without matching-rate experience.

The paper proceeds as follows. Section II develops the model and underlying economic theory. The empirical results are discussed in Section III. Finally, the implications of the relevant behavioral parameters as they relate to achieving wealth neutrality in the Serrano sense are examined in Section IV. Section V contains a concluding comment.

## II. The Model

The demand for education is assumed to be derived from a median-voter, majority-rule model where it can be shown that under certain conditions a community's effective demand for education per family will be that of its median voter (see Robert Deacon (1977)). In order to estimate such a demand curve, Bergstrom and Goodman (1973) have shown that it is possible to treat the expenditures of any municipality as an observation on the demand curve of the median income voter given an additional set of limiting assumptions. Thus, cross sectional information on different municipalities or in our case, school districts, can be used to make inferences about the relationship between the demand for education, price, income and other variables.

The demand for education is specified as follows:

$$\ln E = \delta_0 + \delta_\tau \ln\tau + \delta_2 \ln Y + \delta_3 \ln SG + \delta_4 \ln FG + \delta_5 \ln PRIV + \delta_6 \ln BLACK + \delta_7 \ln SES, \quad (1)$$

where

E = Current educational expenditures per student, including local, state, and federal funds,

$\tau$ = Marginal tax price perceived by the median voter of the district,

Y = Median family income in a district,

SG = State block grants to the district per student,

FG = Federal block grants to the district per student,

PRIV = Percent of district enrollment which is in private schools,

BLACK = Percent of district population which is black,

SES = Composite socioeconomic index for the district.

The δ's are elasticities of expenditures with respect to the independent variables. All dollar values are measured in 1970 dollars. School expenditures and finance data are deflated by the state and local government component of GNP price deflator. Since observations of school-district median income (Y) are available only from 1970 census data, the growth rate of real U.S. personal income was used to produce values for other years. Census data were also used to measure BLACK while all other data and the SES index were supplied by the Delaware Department of Public Instruction.[1]

As will become apparent, the formulation of the tax price τ is a crucial consideration in this paper. With certain modifications, the τ developed below follows that of Helen Ladd (1975). In deriving τ, we assume that the only local taxes are property taxes. Initially, school expenditures are assumed to be the only locally provided public service and that the burdens of nonresidential property taxes are completely exported from districts. Under these conditions, the average tax rate for a resident of any given district is the total district expenditures on education divided by the district's total assessed property value, which can be written as

$$t = \frac{P_U \cdot n \cdot U - SG - FG}{TAS} \qquad (2)$$

where

$t$ = Average tax rate for a given district,

$P_U$ = Resource cost per unit of education,

$n$ = Number of students,

$U$ = Units of education per student ($U = E/P_U$),

TAS = Total assessed value of taxable property.

The median voter's perceived marginal tax price (i.e., the increased tax costs to the median voter of an additional unit of educational services assuming complete exporting of the non-residential tax burden) can be derived from (2) above by differentiating $tH_m$ with respect to U as

$$\tau = \frac{P_U \cdot n \cdot H_m}{TAS}, \qquad (3)$$

where $H_m$ is the assessed value of the median voter's home.[2] If the assumption that education is the only locally financed public service is dropped, $\tau$ remains the median voter's marginal tax price for education.

The result in (3) can be generalized to allow for the payment of matching state aid to a local district. Ladd has characterized the matching rate for a given district in such grant schemes, m, as the state share of a dollar increment in locally financed district education expenditures. When there are effective matching grants, (3) becomes[3]

$$\tau = \frac{P_U \cdot n \cdot H_m}{TAS} * \frac{1}{1+m} \qquad (4)$$

$$= \left[\begin{array}{c}\text{tax-base} \\ \text{component}\end{array}\right] * \left[\begin{array}{c}\text{matching-rate} \\ \text{component}\end{array}\right] \qquad (5)$$

As formulated by the median voter model as in equation (4), $\tau$ is a function of two distinct factors: the tax-base component and the matching-rate component, both entered multiplicatively.[4] Martin Feldstein has introduced a somewhat different notation which will become convenient below, viz. $m^*$ is defined to be the state share of a dollar increment in total (as opposed to only the locally financed part) district education expenditure. Then equation (4) becomes

$$\tau = \frac{P_U \cdot n \cdot H_m}{TAS} * (1-m^*),$$

since it can be shown that $(1-m^*) = 1/1+m$.

Ladd (1974, 1975), in her work on the impacts of the composition of the tax base on the demand for education, has shown that taxpayers appear to realize that increasing local taxes for public education may in the long run erode the tax base since property taxes are likely to influence the location of business firms. In the short run, nonresidential taxes may also impose a burden on local residents through higher prices and lower wages. Thus, voters are likely to perceive a marginal tax price which is greater than that indicated by equation (3). This

implies that the estimated coefficient of the tax price variable is biased downward. (Ladd, 1974, demonstrates this proposition.)

In order to measure the extent of this downward bias, the marginal tax price, $\tau$, can be reformulated to allow for less than 100% exporting of nonresidential taxes. Under this condition, the tax-base component of $\tau$ becomes

$$\tau^* = \frac{P_U[n_f H_m + (1-\gamma)\ (TAS - n_f H_m)]}{TAS} \cdot \frac{n}{n_f} \qquad (6)$$

where $n_f$ is the number of families, and $\gamma$ is the fraction of the nonresidential tax burden which voters perceive is not shifted back to district residents.[5] $\tau^*$ reduces to Ladd's expression if we assume $n = n_f$. Both Ladd's and our derivation assume that $H_m$ is equal to the average assessed value of residential property.

## III. Empirical Results

The results of estimating equation (1) by ordinary least squares are presented in Tables 1, 2, and 3. The data for this study are from the twenty-three regular school districts in Delaware and consist of cross-sectional, time-series observations of educational expenditures and their relevant determinants for the four school years, 1969-1970 through 1972-1973. A generalized Chow test indicates that the four cross-sections can be pooled. For Delaware, $\tau$ requires special interpretation. First, although a matching formula is used to distribute a small portion of state school aid funds (0%-5%), m has been effectively zero in the past

because all districts receive the maximum state aid possible under the matching program. Thus, the definition of $\tau$ which is used in the estimation of equation (1) is that of the tax-base component only (either equation (3) or (6), depending upon the assumption about exporting).[6]

In Table 1, the definition of $\tau$ used assumes complete exporting. The results offer strong support for the basic model with the coefficients of the income and price variables being statistically significant and having the expected signs. Both state and federal aid have significant and positive impacts on expenditures. Among the other variables only percent black is insignificant. As expected, higher district socioeconomic indices are associated with increased demand for public education. In the context of the median-voter model it can be demonstrated that the impact of the private student variables is ambiguous. Larger private enrollments as a percentage of total district enrollment may reflect a loss of confidence by district residents in the public schools. However, families continuing to use the public school system now face a lower tax price for a given expenditure per student. That is, they can transfer part of the costs of public schools to those who send their children to private schools.

The great difference in the relative sizes of state and federal aid elasticities, .66 and .04 respectively, is somewhat surprising. However, the implied marginal impacts (calculated at the means) of additional dollars of aid are much closer

together: .77 for state and .70 for federal.[7] The estimated income elasticity of .44 and the implication that a dollar increase in real income would raise spending by $.04 are within the range found by previous studies of the demand for education. (See Robert Inman (1974) and Deacon.)

Of greatest interest is the coefficient of the price variable, $\delta_\tau$, the estimate of the elasticity of school expenditures with respect to the marginal tax price. The estimated price elasticity of demand for Delaware is -.15. Comparative estimates of the price elasticities, which have been obtained from ours and other studies and assume 100 percent exporting, are shown in Table 2.[8] The most important factor explaining the relatively low elasticity for Delaware is probably the state's substantially higher level of state aid for education relative to other states cited in Table 2.[9] One possible explanation is that the smaller is a district's local share of total revenue, the less sensitive its voters will be to a change in the marginal local tax price of education.

A shortcoming of the studies noted in Table 2 is the assumption of full exporting of nonresidential taxes, which Ladd has argued will produce an underestimate of the price elasticity. In Table 3, equation (1) is reestimated with 1970 data when $\tau^*$ from (6) is employed, allowing for tax exporting less than 100 percent. The price elasticity now is -.23, somewhat greater in absolute value than the -.15 reported above, but less than Ladd's comparable estimate of -.65, also presented in Table 3. The sample here is

TABLE 1

Determinants of Expenditures per Student, 1970-1973[a]

| | |
|---|---|
| Tax Price Elasticity | - .15** |
| | (.04) |
| Income Elasticity | .44** |
| | (.09) |
| State Aid | .66** |
| | (.12) |
| Federal Aid | .04** |
| | (.01) |
| Percent Private | .02** |
| | (.00) |
| Percent Black | .02 |
| | (.01) |
| Socioeconomic Index | .02** |
| | (.00) |
| Constant | - 1.93* |
| | (.80) |
| $R^2$ (adj) | .68 |
| F-statistic | 28.25 |
| Sample Size | 92 |

[a]Standard errors in parentheses.
*Significant at the 5% level of significance.
**Significant at the 1% level of significance.

TABLE 2
Tax Price Elasticity Estimates--Complete Exporting of Nonresidential Property Tax

| Study | Sample | Elasticity |
|---|---|---|
| Ladd | 78 Boston SMSA Communities (1970) | -.31 |
| Feldstein[a] | 105 Massachusetts Communities (1970) | -.39 |
| McEachern | 54 Connecticut Towns (1968-70) | -.25 to -.34 |
| Akin and Youngday | 104 New York State School Districts (1960) | -.19 |
| Barlow | 52 Michigan Urban School Districts (1960) | -.34 |
| Peterson | School Districts Samples from Several States | -.25 to -.70 |
| Black, Lewis, Link | 23 Delaware School Districts (1969-73) | -.15 |

[a]Ladd's adjustment of Feldstein's elasticity (i.e., -.12 from his regression 1.1) is due to his use of total property value as an independent variable which biases the price elasticity estimate downward. No adjustment is required if residential property value is used or if no property value variable is used in the estimating equation. (Ladd, 1974)

TABLE 3
Tax Price Elasticity Estimates--Less Than Complete Exporting of the Nonresidential Property Tax

| Study | Sample | Elasticity |
|---|---|---|
| Ladd | 78 Boston SMSA Communities (1970) | -.65 |
| Black, Lewis, Link | 23 Delaware School Districts (1970) | -.23 |

limited to 1970 data because information on the number of families by school district does not exist for non-Census years. The procedure for estimating $\delta_\tau$ is that suggested by Ladd, and it involves an iterative process of selecting the equation (and its associated $\delta_\tau$) which maximizes the $R^2$ of the expenditure equation. The highest $R^2$ occurs when $\gamma$ is .75 indicating that voters perceive that approximately 75% of the nonresidential tax is exported. Ladd's results differ, however, because she was able to break down nonresidential property between commercial and industrial, finding that the perceived exporting is 71% to 79% for commercial property and 39% to 45% for industrial property.

## IV. Wealth Neutrality--Empirical Evidence

Our results provide a basis for evaluating alternative state matching aid schemes which are aimed at moving toward wealth neutrality in educational expenditures. In the Serrano sense, wealth neutrality in educational finance requires that public school expenditures not reflect differences in local school district wealth, although expenditures per pupil may, in fact, differ across districts so long as these variations are not related to local district wealth. Feldstein has developed a potentially useful methodology for analyzing the wealth neutralizing impact of various matching schemes. In this section, the Feldstein methodology is first outlined. Then the conclusions which he reached based on Massachusetts data are examined and found to

be unsupported by the Delaware findings and by other research. Our differences with Feldstein raise a fundamental methodological issue relating to the proper theoretical framework for policy analysis in school finance.

Feldstein interprets the Serrano mandate as the achievement of a zero total elasticity of expenditures per student with respect to wealth per student across a state's school system. The basic reduced-form equation is

$$\ln E = \alpha_0 + \alpha_1 \ln W + u \qquad (7)$$

where W is the total district market value of real estate per student, $\alpha_1$ is the measure of wealth neutrality, and u is the residual uncorrelated with W. Wealth neutrality requires that $\alpha_1$ equal zero.

Feldstein specified his structural equation (corresponding to our (1)) describing a district's demand for education per student as

$$\ln E_i = \beta_0 + \beta_1 \ln W_i + \beta_2 \ln P_i + \sum_{j=3}^{k} \beta_j \ln X_{ji} + \epsilon_i,$$

where $P_i$ is the matching-rate component only of the marginal tax price, 1-m*, using his terminology, and the $X_{ji}$ are other variables which influence the demand for education, including the tax-base component of the marginal tax price. It can be shown that the measure of wealth neutrality, $\alpha_1$, is a function of certain behavioral parameters as follows:

$$\alpha_1 = \beta_2 \gamma_{p\omega} + \beta_\omega \qquad (8)$$

where $\gamma_{p\omega}$ is the elasticity of the matching-rate component, $P_i$, with respect to $W_i$ and $\beta_\omega$ (the "adjusted wealth elasticity") is defined as

$$\beta_\omega = \beta_1 + \sum_{j=3}^{k} \beta_j \gamma_{j\omega}.$$

The $\gamma_{j\omega}$'s denote elasticities of the $X_j$ with respect to W. $\gamma_{p\omega}$, which is defined by the relationship $P_i = 1-m_i^* = kW_i^{\gamma_{p\omega}}$, is a policy parameter in the sense the state can assign matching-rates, $m_i^*$, to correspond to a particular $\gamma_{p\omega}$. From equation (8), it can be seen that wealth neutrality (i.e., $\alpha_1 = 0$) can be achieved if the matching-rate scheme is such that $\gamma_{p\omega} = -\beta_\omega/\beta_2$, where $\beta_\omega$ and $\beta_2$ are behavioral parameters. It is obvious that the more sensitive expenditures are to the tax price as opposed to wealth, the less severe must be the state mandated progression in $P_i$ with respect to $W_i$ across districts to establish wealth neutrality.

Feldstein used estimates of the behavioral parameters $\beta_\omega$ and $\beta_2$ to analyze the matching-rate scheme in effect in Massachusetts in 1970. He argued that while the scheme was not wealth neutral, complete wealth neutrality could be achieved by a relatively small increase in $\gamma_{p\omega}$. Using his preferred estimates $\hat{\beta}_\omega = .37$ and $\hat{\beta}_2 = -1.00$, Feldstein calculated the $\gamma_{p\omega}$ required for complete wealth neutrality was .37 (i.e., $\gamma_{p\omega} = -.37/-1.00$), somewhat higher than the effective $\gamma_{p\omega}$ of .18 under the actual matching-rate scheme then in effect. It is important to note that the relatively small required increase in $\gamma_{p\omega}$ to achieve

wealth neutrality depends critically on the very large (in absolute value) estimate of the elasticity of the matching-rate component of the marginal tax price, compared to the price elasticities of Tables 2 and 3.

The question which naturally arises is whether Feldstein's wealth-neutralizing scheme is a useful policy tool for the roughly two-thirds of the states like Delaware which have no recent experience with matching-rate schemes and thus have no experience on which to base an estimate of the elasticity of the matching-rate component of the marginal tax price, unless one borrows an estimate from a state like Massachusetts or unless one can infer the matching-rate component elasticity from knowledge of the tax-base component elasticity.[10] It is precisely the latter possibility that is inherent in the median voter framework, since the two components enter the demand equation multiplicatively and the two elasticities are equal in theory. Based on the theoretical model we propose, a marginal tax price involving only the tax-base component does provide the basis for a valid estimate of $\beta_2$, the matching-rate component, even in the absence of matching-rate experience.

We use our estimates of the behavioral parameters $\beta_2$ and $\beta_\omega$ to analyze the specifics of a wealth-neutral matching-rate scheme for Delaware. However, our basic conclusion is at variance with Feldstein's. While he found a relatively small increase in $\gamma_{p\omega}$ was needed for wealth neutrality, we find a very large increase is needed. Using our tax-base component elasticity of -.23, which

allows for exporting, to proxy the matching-rate component, and estimating $\beta_\omega$ for Delaware as .22, the achievement of complete wealth neutrality would require a $\gamma_{p\omega}$ of approximately .96, a relatively large increase from its actual 1970-73 effective value of zero.[11] While the price elasticity is based on a relatively short historical record and implicitly assumes the equality of median and average housing values, the alternative estimate of -.15 in Table 2 produces results even more at variance with Feldstein's. In order to emphasize the difference between our and Feldstein's results, we made some very rough, partial equilibrium calculations which imply that under the wealth neutralizing scheme, the required matching rate, m*, for the poorest Delaware district would have to be roughly twice as large as the actual corresponding Massachusetts rate as reported by Feldstein for 1970.[12]

A second, striking difference between the results is their implication for the wealth neutralizing effects of a district power equalizing formula (DPE), in which any two school districts that levy the same tax rate on local wealth have the same level of educational spending. Feldstein concludes that in Massachusetts a DPE formula, which he shows to imply $\gamma_{p\omega}$ equals one, would cause expenditures per pupil in poor districts to be very much greater than in wealthy districts. The Delaware results, however, which imply a wealth neutralizing $\gamma_{p\omega}$ of .96, indicate that DPE would be essentially wealth neutral, with an $\alpha_1$ implied by DPE of -.01 (.22 - .23 * 1.01).[13] However, we must qualify

this result to note that because of the relatively low price elasticities which we have estimated, a DPE matching-rate scheme for Delaware would more than likely be subject to minima, maxima, and related restrictions which could seriously affect its wealth-neutralizing properties.

It is important to note that the relatively large increase in $\gamma_{p\omega}$ required for wealth neutrality in Delaware is not due to the existence of an extremely non-wealth-neutral situation. In fact, as a state with virtually no matching aid, Delaware exhibited over the sample period a degree of wealth neutrality which is about the same as that of Massachusetts for 1970 as reported by Feldstein: $\hat{\alpha}_1$ for Massachusetts was .19 while $\hat{\alpha}_1$ for Delaware is .22.[14]

The primary reason for the difference in the required $\gamma_{p\omega}$ for wealth neutrality between our study and Feldstein's is, instead, the very great difference in the estimates of the matching-rate component price elasticities, -1.00 vs. -.23. As noted above, we do not have a direct measure of the matching-rate component elasticity; instead we employ the median voter framework which indicates that the matching-rate component elasticity is equal to the tax-base component elasticity which we can estimate. Both Barro (1972) and Ladd have proposed the multiplicative formulation and Ladd, in her estimates, using a sample of Massachusetts urban districts for which matching-rate data were available, tested for the equality of the price elasticities of the two components. She found the estimates of the two elasticities

to be very close and not significantly different. Feldstein's results, on the other hand, are very disquieting. While he does not test explicitly for the equality of the two price-component elasticities, they appear to be significantly different in his samples (-.39 for the tax-base component and -1.0 for the matching rate component).[15] Feldstein's results indicate that the implication of the median-voter framework, viz. that the two price component elasticities are equal, does not stand up to statistical testing and that one must be able to measure the matching-rate component directly in order to anticipate the wealth-neutralizing properties of a particular matching-rate scheme.

By ignoring the marginal tax price implications of the tax base component of $\tau$, Feldstein is implicitly rejecting a homogeneous perception by the median voter of both components. He does not offer any theory of collective decision-making which might explain such a result. Perhaps expenditures are more sensitive to the local share of matching funds than to the tax base component because the latter may be imprecisely perceived relative to the former; both Bergstrom and Barro have suggested possible tax-price illusion with respect to the tax-base component. Certainly school administrators in proposing budgets have an incentive to publicize to the voters the ramifications of matching aid. On the other hand, the median-voter model assumes that voters have and use a great deal of information and that the median voter is the "correct" voter. Inman, among others, in

determining the demand for public goods, has suggested that alternative voting models may be more appropriate.

Although our findings support conclusions which are contrary to Feldstein, we do not propose to substitute our results for his. Instead our primary conclusion is that useful attempts to evaluate alternative state matching aid plans cannot begin until additional empirical evidence is produced to determine the relationship of the elasticity of matching-rate and the tax-base components of the marginal tax price. At issue here is the appropriateness of the median voter model and the practical problem for states without matching-rate plans to anticipate the effects of such plans.

## V. A Final Comment

It is important to realize that the policy analysis framework employed in this study and others like it is very incomplete. More relevant policy analysis would have to incorporate potential constraints on the selection of a matching aid system. Indeed, it is possible that given reasonable constraints, a completely wealth neutralizing scheme may not exist. For instance, even for a state providing as much state aid as Delaware, wealth neutrality may not be possible without negative matching rates in the richest districts, i.e., without a recapture provision which has been held to be unconstitutional in Wisconsin. Moreover, even something close to a zero matching rate in the richest districts may not be

politically feasible because it would imply a commitment to almost complete end to state aid for those districts. There would be strong pressure to combine any matching plan with some block grants to all districts, which could make it impossible to achieve wealth neutrality with the funds which are left for matching. In addition, the underlying model should be expanded to take into account the general equilibrium, locational responses of firms and households, or going one step further, to take into account the possible systematic reaction of the political process to frustrate externally imposed policies. Given the potential volatility of the behavioral elasticities, one also has to deal with the stability of the elasticities, both temporally and with respect to potentially large variations in allocations of state aid and with problems of continuous reestimation.

Given the problems of designing, implementing, and overseeing a wealth neutralizing matching scheme, the Delaware system of large block grants is an attractive alternative. The system is relatively simple to administer, and it has produced a degree of wealth neutrality which compares well to at least one matching-aid state, Massachusetts. In any case, future research could contribute greatly to our understanding not only of the more technical issues investigated in the paper but also of the determinants of the feasible set of matching aid plans.

FOOTNOTES

[1]The district composite SES index is derived from data gathered annually by the Delaware Department of Public Instruction from the principals of each school in the state. The actual index is a weighted average of the following variables: mother's educational level, family incomes, occupational composition for heads of households, average cost of housing in the school attendance area, percentage of students enrolled at the first of the year who are still enrolled, and the percentage of pupils in school area who live in family units when one parent is not living in the home.

[2]The assessed value of the median voter's home was calculated from market values of owner occupied housing contained in the 1970 census. The market value was multiplied by the prevailing county-wide ratio of assessed-value to market-value.

[3]Equation (4) follows from a generalized equation (2). For A = State matching grants and $E = P_U \cdot U$, local funds $L = E - A$. Defining $m = A/L$ and assuming SG = FG = 0, the average district tax rate is

$$t = \frac{n(E-A)}{TAS} \quad \text{or} \quad \frac{nL}{TAS} .$$

Rearranging terms, t can be rewritten as

$$t = \frac{nE}{TAS} * \frac{1}{1+m} = \frac{P_U \cdot n \cdot U}{TAS} * \frac{1}{1+m}.$$

[4]The basic difference between our definition of $\tau$ and Ladd's is that she uses the number of families and average district housing value instead of the number of students (n) and the assessed value of the median voter's home ($H_m$) respectively. Consequently, the price variable she uses for her empirical estimates is not consistent with her theoretical model. Since her dependent variable is expenditure per student (as in equation (1)), the number of students must be used in the price term. In addition, her use of a median voter, majority rule model requires the use of median housing value.

[5]The derivation of $\tau^*$ proceeds as follows: to repeat equation (2), the average tax rate, t, is

$$t = \frac{P_U \cdot n \cdot U}{TAS} .$$

The average tax for the median voter assuming 100% exporting is $t \cdot H_m$. The average tax for the median voter who perceives that part of the nonresidential tax is actually part of his own tax burden, as if it increased the effective assessment on his home, is

$$t[H_m + (1-\gamma)\ NR/n_f],$$

where $(1-\gamma)\ NR/n_f$ is the median homeowner's share of the nonresidential tax base, NR, which he or she perceives is not exported. If t above is then substituted into the expression representing the average tax with less than 100% exporting, it becomes

$$t[H_m + (1-\gamma)NR/n_f] = \frac{P_U \cdot n \cdot U \cdot H_m}{TAS} + \frac{P_U \cdot n \cdot U\ (1-\gamma)NR/n_f}{TAS}.$$

$\tau^*$ is the partial derivative of the entire left-hand side of the above with respect to U, and NR = TAS - $n_f H_m$, where $H_m$ is assumed equal to the average assessed value.

[6]In addition, the resource cost per unit of education, U, is assumed to be the same throughout the state, which is not unreasonable for a state as small as Delaware (see Financing the Public Schools of Delaware, pp. 118-123). $H_m$ is calculated from the market value of the median owner-occupied house and legal ratios of assessed to market value in each county. To the extent that legal ratios are not an accurate reflection of the actual district assessment ratios, measurement error of an unknown size is possible.

[7]We had expected that federal grants, which are typically for special purposes, would have a greater marginal impact than state grants which in Delaware are for the most part block grants. Several factors may help to explain this result. First, in Delaware federal aid per pupil varies over such a wide range that the average marginal impact of .70 is likely to reflect the true marginal impact in only a very few districts. With per pupil federal aid in a few districts being over ten times that of some other districts, the marginal impact of federal aid in low aid districts is well above .70, and the marginal impact in the few high aid districts is much less than .70. Second, most of the federal aid in one of the districts receiving the most federal aid is not in the form of a special purpose grant which will tend to reduce the measured elasticity of federal aid.

Third, the measured state aid elasticity may be increased by the fact that a large amount of Delaware state aid is distributed as specific block grants. Since Delaware state aid is a substantial part of total local expenditures, approximately 70 percent, special purpose block grants to poorer districts may have a high expenditure impact similar to federal special purpose grants. If the grants exceed what the districts would have spent for some specific purpose had the funds not been restricted, then the expenditure impact is greater than for smaller block grants which are supplemented by local funds.

[8]It should be noted that all of the elasticity estimates in Table 2 may be biased downward to varying degrees due to errors in the measurement of the perceived marginal price, $\tau$. Few voters are likely to have a very precise idea of what their true $\tau$ is, and one would expect that the accuracy of perceptions may differ considerably from one area to another. Another potential bias is introduced into all median voter, majority rule studies, including ours, by the method of identifying the median voter. Selection is based on the distribution of housing values of owner occupants, thus ignoring renters. Compared to owner occupants, renters probably occupy housing with a different distribution of values, and therefore they may have a different perception of the marginal tax price.

[9]The State of Delaware provides approximately 70% of total revenue while the other states cited in Table 2, Massachusetts, Connecticut, New York and Michigan, provided 25%, 23%, 48%, and

41% respectively in 1971 (see Robert Reischauer and Robert Hartman (1973), p. 11).

[10]In implementing Feldstein's scheme, $\beta_2$ is the matching-rate component elasticity only; the tax-base component elasticity is subsumed in $\beta_\omega$ along with the wealth-related effects of the remaining independent variables.

[11]$\beta_\omega$ is calculated as suggested by Feldstein, p. 84. Since $P_i$ is 1 for all Delaware districts, $\beta_\omega$ is the bivariate regression coefficient between lnE and lnW as defined above. $\beta_\omega$ is estimated with data over the 1970-1973 school years. W is measured as full valuation of property per pupil, adjusted for alternative assessment base years between counties.

[12]The estimated, wealth-neutralizing $\gamma_{p\omega}$ for Delaware $= .96 = \frac{\%\Delta P}{\%\Delta W} \cong \frac{\Delta \ln P}{\Delta \ln W}$. Since $\Delta \ln W = 1.62$, based on 1970 figures for Delaware, the required $\Delta \ln P = (.96)(1.62) = 1.56$. Assuming $m_i^* = 0$ and $P_i = 1$ for the richest district, the implied values for the poorest district are $m_i^* = .79$ and $P_i = .21$. By way of contrast, we calculate in a similar manner that to achieve Feldstein's wealth-neutralizing $\gamma_{p\omega}$ of .37 under the 1970 plan would require a matching rate for the poorest Massachusetts district of approximately .63.

[13]Implementation of such a wealth-neutralizing matching rate scheme based on the framework above would depend on whether the behavioral elasticities are stable in the face of potentially wide swings in the level of state aid once a plan is implemented

the stability of the elasticities over time, and the political acceptability of wide swings in the allocation of state funds without reacting in a systematic manner to frustrate the reform. An example of the latter problem is the existence of numerous restrictions observed in states which currently have matching schemes.

[14]Since $\hat{\alpha}_1 = \hat{\beta}_\omega + \hat{\beta}_2 \gamma_{p\omega}$ and $\gamma_{p\omega}$ is zero in Delaware in the absence of a matching-rate scheme, $\hat{\alpha}_1 = \hat{\beta}_\omega = .22$. For 1970 Massachusetts, using Feldstein's estimated, $.19 = .37 - 1.00(.18)$.

[15]In his specification, Feldstein does not include both price components explicitly. However, he does include a variable labeled RES, which can be interpreted as the tax-base component, as a separate regressor in multiplicative form. As Ladd has noted (see footnote a to Table 2), Feldstein's coefficient of RES is biased downward because of the inclusion of total property wealth rather than only residential wealth, a permanent income measure. However, even after correction for the bias, the estimate of the tax-base component elasticity is substantially less than one in absolute value.

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Appendix IV-A

# WEALTH NEUTRALITY:
# AN ECONOMETRIC MODEL OF SCHOOL FINANCE IN DELAWARE

by

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# Wealth Neutrality:
# An Econometric Model of School Finance

Due to a series of recent court decisions, systems of school finance are currently under legal challenge in many states. As a result of this legal pressure substantial changes are inevitable in the way many state and local governments finance their most important single function. Some states have already instituted major changes in their educational finance systems, and many others are seriously considering changes. Unfortunately, policy making in this area has been severely handicapped. On one hand there is a lack of clear operational signals from the courts regarding legal requirements, and on the other hand there is a lack of sufficient systematic empirical analysis of the impact of alternative methods of financing local education on the distribution of tax burden and on the behavior of the school system itself.

Martin Feldstein provides a general framework which allows the analysis of wealth neutrality in school finance schemes. This paper presents the initial results of an attempt to explore some of the requirements and difficulties of adopting this "wealth neutralizing" approach to financing local schools in the State of Delaware.[1] Delaware, because the state supplies such a large share of the total school funding, provides an interesting test of the wealth neutrality of a state educational finance plan.[2] Although few states provide a larger share of total funds than Delaware, the distribution of expenditures per student in Delaware

is still unequal and is not wealth neutral according to our findings. When Delaware is compared to other states for which there are estimates of the degree of wealth neutrality, our preliminary results suggest that it compares unfavorably to Illinois and Michigan, but favorably to Massachusetts and Kansas (Feldstein, 1975; and Yang, 1975).[3] Our results also suggest that earlier studies have glossed over a potentially serious problem by assuming that the elasticity of expenditures with respect to wealth does not vary across districts in any given state. In Delaware, wealth elasticities vary significantly across districts in the state. If this result is indicative of what is the case in other states (and we suspect that it is), our main conclusion is that current efforts to design wealth neutralizing state aid plans need to be reevaluated.

In section I of this paper the current legal situation is reviewed, and relevant characteristics of the Delaware system are presented. The methodology is developed in section II, and test results are presented and discussed in section III.

## I. Current Judicial Situation

The first round in a succession of landmark court cases was Serrano v. Priest which was originally decided in 1971 and then again in 1976 by the California Supreme Court.[4] In the first decision the court held that because the quality of education was a function of local district wealth under the existing school finance system, the system violated the equal protection clause of the 14th Amendment to the U.S. Constitution. In its decision the California Supreme Court stated that the "economic burden of public education cannot be a function of wealth other than the wealth of the state as a whole." More specifically, pupils in poorer districts were held not to have had an equal opportunity to obtain a quality education. In California, as in other states, the positive correlation between wealth (measured by assessed values of property per pupil) and educational opportunity (measured by expenditure per pupil) is caused in part by dependence on the property tax as the major source of local revenue and by the failure of the state's equalization formula to counteract the influence of widely different per-pupil property tax bases. The court did not, however, rule out the use of the property tax as a revenue source for school finance. In fact, the court did not suggest any specific solutions to the problem. Nevertheless, if dependence on property tax revenue introduces the influence of wealth on expenditures, by implication the state's aid formula would have to at least partially neutralize this influence. Finally, it is important to note that the court did not require the state to

equalize per-pupil expenditures across districts but rather to reduce the influence of local wealth on the variation in these expenditures.

The first Serrano case was followed in 1973 by the decision of the U.S. Supreme Court in San Antonio Independent School District vs. Rodriguez where the Court held that the equal protection clause of the 14th Amendment to the U.S. Constitution does not apply to the provision of education.[5] The decision placed the primary responsibility for educational finance reform in the hands of state courts and legislatures. Given the Rodriguez decision, the Serrano case reentered the courts, where in 1976, the California Surpreme reaffirmed its first decision in holding that California's educational finance system was in violation of the equal protection provision of the California State Constitution. If other State Courts come to Serrano type interpretations it will be of prime importance for states to achieve a pattern of per-pupil local expenditures which meet some acceptable degree of wealth neutrality.[6]

## II. Methodology

In the Serrano sense, wealth neutrality in educational finance requires that educational expenditures do not reflect differences in local school district wealth. Expenditures per pupil, in fact, may differ across districts so long as these variations are not related to district wealth. Although the desire on the part of wealthier districts to spend more on public education cannot be readily changed, state authorities can "neutralize" this tendency in a variety of ways. The most extreme solution to wealth related expenditure differentials is for the state to assume the entire funding of school finance. A less extreme solution having the virtue of perserving local choice is for the state to neutralize wealth-related expenditure differences through a system of matching grants. Feldstein (1975) proposes the latter approach and investigates its empirical implications for Massachusetts. This methodology is outlined below and applied to the State of Delaware where we examine the changes needed to achieve wealth neutrality.

Feldstein interprets the Serrano mandate for wealth neutrality to mean that the total impact of district wealth on per pupil expenditures is zero. Thus, although wealthy districts may wish to spend more on education (a partial effect), this behavioral tendency can be neutralized through a matching grant inversely related to district wealth.

Underlying the analysis is the logarithmic specification of the following behavioral relationship

$$\ln E_i = \beta_0 + \beta_1 \ln W_i + \beta_2 \ln P_i + \sum_{j=3}^{K} \beta_j \ln X_{ji} + u_i \qquad (1)$$

where $E_i$ is total current educational expenditure per pupil in community i, $W_i$ is wealth per pupil (usually measured as the assessed value of taxable property), $P_i$ is the net price that the community pays per extra dollar of expenditure, $X_j$ is a vector of socioeconomic characteristics affecting community behavior, and $u_i$ is a random disturbance. $P_i$ is defined as $1 - m_i$, where $m_i$ is the state matching rate (i.e., the additional state aid received when local districts increase expenditures by one dollar). Educational authorities can control $P_i$ through a system of matching grants and thus determine the net price to school districts of an additional dollar spent on education. The matching rate $m_i$ would vary inversely with wealth in order to offset interdistrict wealth differences.

The <u>total</u> relationship between $P_i$ and $W_i$ is specified as:

$$P_i = kW_i^{\gamma_{pW}} \text{ or } \ln P_i = \ln k + \gamma_{pW} \ln W_i. \qquad (2)$$

<u>Total</u> relationships also may exist between socioeconomic characteristics, $X_j$, and wealth, and can be written as:

$$X_{ji} = \alpha_j W_i^{\gamma_{X_jW}} \text{ or } \ln X_{ji} = \ln \alpha_j + \gamma_{X_jW_i} \ln W_i \quad (j = 3 \ldots k) \qquad (3)$$

Substituting (2) and (3) into (1) we obtain:

$$\ln E_i = \alpha_0 + \alpha_1 \ln W_i + u_i. \qquad (4)$$

Complete wealth neutrality requires that the <u>total</u> elasticity of expenditures with respect to wealth ($\alpha_1$) be zero regardless of the size of the partial wealth elasticity ($\beta_1$). Thus, complete wealth neutrality occurs when:

$$\alpha_1 = \beta_1 + \beta_2 \gamma_{pW} + \sum_{j=3}^{K} \beta_j \gamma_{X_jW} = 0. \qquad (5)$$

Policy makers can then adjust matching grants ($m_i$) in accordance with the $\gamma_{pW}$ needed to achieve the desired degree of wealth neutrality. By setting (5) equal to zero and solving for $\gamma_{pW}$ it is observed that complete wealth neutrality occurs when:[7]

$$\gamma_{pW} = -\frac{\beta_W}{\beta_2} \tag{6}$$

where $\beta_W = \beta_1 + \sum_{j=3}^{K} \beta_j \gamma_{X_j W}$. Note that $\beta_W$ measures the effects of all wealth related variables <u>except</u> the price variable, $P_i$. Thus in states with equalizing formulas we would expect $\beta_W$ to exceed $\alpha_1$.

In order to determine $\gamma_{pW}$ in (6) it is necessary to estimate $\beta_W$ and $\beta_2$ from expenditure, wealth, price, and socioeconomic data for school districts. $\beta_W$ can be obtained by subtracting the $\beta_2 \ln P_i$ term from both sides of equation (1):

$$\ln E_i - \beta_2 \ln P_i = \beta_0 + \beta_1 \ln W_i + \sum_{j=3}^{K} \beta_j \ln X_{ji} + u_i \tag{7}$$

$\beta_2$ is estimated in equation (1) and used to construct the dependent variable $\ln E_i^* = \ln E_i - \hat{\beta}_2 \ln P_i$ in equation (7). The estimating equation to determine $\beta_W$ is simply:

$$\ln E_i^* = \alpha_0 + \beta_W \ln W_i + \varepsilon_i. \tag{8}$$

In adapting this methodology to Delaware, it is important to note that since Delaware in effect has no matching grant scheme, $P_i = 1$ and $\ln P_i = 0$. Thus $\ln E_i^* = \ln E_i$ and (8) reduces to equation (4).

## III. Empirical Results

### A. Data

The basic data for the present study were obtained from the Delaware Department of Public Instruction. These data include by district: expenditures per student enrolled, the assessed value of property per pupil enrolled, and state aid per pupil.

All variables measured in dollars are converted to 1970 dollars, and with the exception of assessed values per student, the price index employed in the adjustment process is the state and local government component of the GNP deflator. A different procedure was required to obtain assessed values per pupil enrolled. The problem arises because each of the three counties in Delaware conducts its own assessments and, moreover, reassessments have occurred infrequently and at different dates in each county. Within each county, assessments are based on construction costs which existed in a particular year (generally at least two years prior to the reassessment) and thus a house with X bedrooms and Y baths, etc., is assessed at a particular value. It is important to reemphasize that within a county, assessments are in base year prices, namely the prices associated with houses and properties with certain characteristics in a base year. The assessed values of property in all school districts in the three counties were converted into 1970 dollars. These adjusted assessed values were then converted into measures of real market value of property per student by dividing the assessed values by the appropriate assessed-to-sales-price ratios employed by each county (labeled "adjusted full valuation").

An alternative measure of wealth is average family income by school district which was estimated from the Elementary-Secondary General Information Survey. These income data by school district were estimated from 1970 Census data. Since school districts do not generally coincide with Census areas such as census tracts, the Census Bureau used a technique of estimating the percentage of particular census areas which were part of each school district. Thus, minor civil division and census tract data were aggregated to the school district level. The estimation technique is not without problems, but it should provide an adequate measure of income differences as they existed in 1969.[8]

B. Estimations of Total Wealth Elasticities: Property Values Versus Income

Our measure of fiscal neutrality is the coefficient of the wealth variable from equation (4), $\alpha_1$, in the log linear regression of real current expenditures (E) per student on wealth (W). We estimate this relation using pooled cross-section time series data for the twenty-three regular school districts in Delaware during the 1970-1976 fiscal years. The relevant regression coefficients are shown in Table 1. We felt that weighting expenditures and wealth by different "need" (e.g., per pupil, ADA, ADM, State unit, etc.) concepts might lead to different results for fiscal neutrality.[9] However, the results in Table 1 disspell this belief, at least for Delaware, since the expenditure elasticity with respect to wealth is very similar, whether the variables are weighted by pupils or units. The expenditure elasticity with respect to wealth ranges from .18 in the expenditures per-unit equation to .22 when expenditures per student is employed as the dependent variable.

In order to evaluate the relative inequality of Delaware's school finance scheme it would be helpful to be able to compare the estimated elasticities for different states. The only comparable figures are the property wealth elasticities ($\beta_W$) ranging from .37 to .41 (depending upon the particular samples) obtained by Martin Feldstein for Massachusetts school districts in 1970. Even though Massachusetts provides a sizeable portion of its funds to its districts by a percentage-equalizing scheme where poorer districts receive more aid, state aid comprised only 28 percent of the total state and local revenues in 1976. In contrast, in Delaware where the state distributes most of its dollars to districts on a unit basis, state aid is about 76 percent of total local and state revenues.

As noted above, a crucial element in the matching-grant scheme proposed by Feldstein is $\gamma_{pW} = -\beta_W/\beta_2$, the policy variable indicating the elasticity of price with respect to wealth which will lead to wealth neutrality ($\alpha_1 = 0$). In Massachusetts, using the 1970 estimates of $\beta_W$ and $\beta_2$, complete wealth neutrality would occur with $\gamma_{pW}$ ranging between .33 and .37. Since the effective 1970 Massachusetts value of $\gamma_{pW}$ (i.e., the price elasticity of the district price with respect to wealth which is reflected in the Massachusetts equalization formula) under the matching-grant scheme in operation was .18, complete wealth neutrality, if preferred or mandated by the court, could be achieved by a relatively small increase in $\gamma_{pW}$.

At present, since Delaware has in effect no matching-grant scheme,[10] the local/district price for a dollar of expenditures is one and the $\ln P_i$ is zero. Since $P_i = kW_i^{\gamma_{pW}}$, Delaware has in effect a "matching-grant" scheme with $\gamma_{pW} = 0$. In applying Feldstein's

framework to Delaware, we have relied on estimates of $\beta_2$ from other states (i.e., the price in Delaware is constant and equal to one).[11] Using the estimates of $\beta_W$ in Table 1 (.22 to .18 depending upon the "need unit") and using his basic estimate of $\beta_2$ as -1.00, complete wealth neutrality in Delaware could be achieved with a matching-grant scheme with a $\gamma_{pW}$ of approximately .20.[12] Particularly striking here is the similar increase in $\gamma_{pW}$ over that in practice required to achieve wealth neutrality in Delaware and Massachusetts (i.e., from .0 to .18-.22 in Delaware versus .18 to .33-.37 in Massachusetts) even though the basic state education financing plans differ markedly. Moreover, it appears that complete wealth neutrality in Delaware could be achieved by what appears to be a relatively small increase in $\gamma_{pW}$. It is interesting to note that a finance plan so heavily dependent on state funds does not automatically guarantee wealth neutrality.

Be cautioned, however, that the Feldstein argument, while attractive, places great emphasis on the estimates of $\beta_W$ and $\beta_2$. We demonstrate below that one must be very careful in estimating these parameters, being sure to allow for structural (parameter) differences over time as well as between districts or district groupings. The wealth neutralizing potential of his plan depends crucially on the stability of the behavioral parameters, the success with which structural changes or drifts can be detected, and the flexibility of the state education financing plan to incorporate and adjust for such changes.

In Serrano one of the crucial issues involved the inability of poor school districts to raise local revenues to support public

Table 1

Regression Coefficients for the Total Elasticities of Expenditure Equations[a]

(Dependent Variable: ln current expenditures per need unit in 1970 dollars)

| Variable | Per Student | | Per Unit | |
|---|---|---|---|---|
| ln Market Value of Property | .22* (.02) | -- | .18* (.02) | -- |
| ln Average Family Income | -- | .28* (.04) | -- | .27* (.03) |
| Constant | 4.35* (.26) | 4.19* (.33) | 7.34* (.34) | 7.33* (.29) |
| Adj. $R^2$ | .34 | .27 | .34 | .32 |
| SSE | 2.2 | 2.4 | 2.0 | 1.8 |
| n | 161 | 161 | 161 | 161 |

*Significant at the .05 level of significance.

[a]Standard errors in parentheses.

education. In this case ability to pay was measured in terms of property values. However, future courts could reasonably insist on some form of income as another, perhaps better, measure of ability to pay. If courts so rule, an appropriate measure of fiscal neutrality could be found by estimating the expenditure elasticity with respect to some measure of income (e.g., average family income, taxable income, etc.).[13]

The income elasticities are estimated from a bivariate regression of the natural logarithm of expenditures on the natural logarithm of average family income and are shown in Table 1. The constant elasticity of expenditure with respect to family income is approximately .28, slightly higher than the elasticities obtained for property wealth. Rephrasing the analysis in terms of income rather than property values as the "wealth" measure (i.e., $P_i = kY^{\gamma_{py}}$), and assuming $\beta_2 = 1$, a matching-grant scheme with a $\gamma_{py}$ of approximately .28 on an income basis would be appropriate for complete "wealth" neutrality.

C. Interdistrict Differences in the Adjusted Total Wealth Elasticity ($\beta_W$).

One problem with the results to this point is that the wealth and income elasticities have been constrained to be equal across districts.[14] However, Wilmington, the second largest school district in the state, is the only district located in a central city. Moreover, the taxing decisions there are not up to the school board but instead are made by the city council. We allow for potential interdistrict variation in $\beta_W$ by introducing a series of constant

and slope dummies. The district classifications, commonly employed in studies of this kind represent central-city districts within an SMSA (Wilmington), remaining districts (suburban) within the SMSA (11 remaining school districts in New Castle County), cities and towns with populations over 10,000 outside an SMSA (two Dover districts) and remaining (rural) districts outside an SMSA (the nine remaining Kent and Sussex County districts). Constant, zero-one, dummies are formed for the central-city districts, the suburban districts, and the small-city districts as defined above (the rural districts in Kent and Sussex County form the base group). To account for slope differences among the classifications, slope dummies are created for the central-city, suburban, and small-city districts by multiplying the respective constant dummy times the natural logarithm of property wealth (income) per student enrolled (unit). The results are shown in Table 2.[15]

First, the results are sensitive to the specification of the dependent variable, i.e., expenditures per pupil versus expenditures per unit. A priori, the units deflator is preferred, since units account for cost differences in Delaware of servicing different types of students (primary, secondary, vocational, special); the higher $R^2$ for the units regressions reinforces this choice. While only nine of the 12 slope dummies enter with coefficients that are statistically significant at the five-percent level of significance, covariance tests indicate that it is inappropriate and thus potentially misleading to pool data over the four-district subgroupings as we have done above following Feldstein.[16]

These statistically significant differences point to a potential problem in implementing a wealth (income) neutralizing scheme

Table 2

Regression Results:
Estimated Total Elasticities for Expenditures
Per Student Enrolled and Per Unit

| Variable | Per Student | Per Unit | Per Student | Per Unit |
|---|---|---|---|---|
| Constant [Rural Districts] | -5.50* | 8.65* | 7.85* | 8.56* |
| | (.32) | (.33) | (.14) | (.95) |
| ln Property Values In 1970 Dollars [Rural Districts] | .11* | .08* | | |
| | (.03) | (.02) | | |
| ln Average Family Income In 1970 Dollars [Rural Districts] | | | - .14 | .12 |
| | | | (.16) | (.10) |
| Constant-Dummy | | | | |
| Central-City Districts | 7.20* | 3.96* | 6.86 | 5.13 |
| | (2.9) | (2.2) | (12.4) | (8.26) |
| Suburban Districts | -1.33* | -2.35* | -3.70* | -2.10* |
| | (.44) | (.43) | (1.48) | (.98) |
| Small-City Districts | - .49* | 2.86* | -6.98* | 6.60* |
| | (.60) | (.77) | (3.08) | (2.04) |
| Slope-Dummy | | | | |
| Central-City Districts | - .64* | - .26* | - .70 | - .51 |
| | (.27) | (.16) | (1.35) | (.90) |
| Suburban Districts | .14* | .18* | .41* | .23* |
| | (.04) | (.03) | (.16) | (.11) |
| Small-City Districts | .05 | - .20* | .76* | - .71* |
| | (.06) | (.06) | (.34) | (.22) |
| $\bar{R}^2$ | .66 | .78 | .60 | .78 |
| SSE | 1.08 | .65 | 1.27 | .56 |
| n | 161 | 161 | 161 | 161 |

*Significant at the .05 level.

based on estimates of $\beta_W$ (and presumably $\beta_2$, although Delaware has no experience here) and thus $\gamma_{pW}$. Our results suggest that Feldstein's estimates may be averages where $\beta_W$ and $\beta_2$ vary over district groups. The question which immediately arises is whether Feldstein's matching-grant scheme based on a state school system's average $\gamma_{pW}$ remains wealth neutral in the face of $\gamma_{pW}$'s which vary systematically among district groups. A related problem is that if $\beta_W$'s differ, then presumably so do the $\beta_2$'s. To the extent that it is necessary to use $\beta_2$ estimates from other states (see footnote 11), these estimates should allow for the same intergroup differences as in the $\beta_W$ estimates. However, to implement a matching-grant scheme in Delaware which has no experience on which to estimate $\beta_2$, it is necessary to use estimates from another state. However, these estimates should allow for the same intergroup differences as in the $\beta_W$ estimates.[17]

## IV. A Final Comment

It is also crucial to realize that the theoretical underpinnings in this study and others like it is incomplete. More relevant policy analysis would have to incorporate potential constraints on the selection of a matching aid system. Indeed, it is possible that given reasonable constraints, a completely wealth neutralizing scheme may not exist. For instance, even for a state providing as much state aid as Delaware, wealth neutrality may not be possible without negative matching rates in the richest districts, i.e., without a recapture provision which has been held to be unconstitutional elsewhere. Moreover, even something close to a zero matching rate in the richest districts is probably not politically feasible because it implies a complete or almost complete, end to state aid for those districts. There would be strong pressure to combine any matching plan with some block grants to all districts, which could very well make it impossible to achieve wealth neutrality with the funds which are left for matching, in light of the current State budget allocated to education. Given the problems of designing, implementing, and overseeing a wealth neutralizing matching scheme, including the estimation problems with regard to $\beta_W$ and $\beta_2$ discussed above, the Delaware system of large block grants is an attractive alternative. The system is relatively simple to administer and it has produced a degree of wealth neutrality which compares well to at least one matching aid state, Massachusetts. In any case, future research could contribute greatly to our understanding not only of the more technical issues investigated in the paper but also of the determinants of the feasible set of matching aid plans.

FOOTNOTES

[1]Complete "wealth neutrality" exists when the elasticity of expenditures with respect to wealth is zero. See section II.

[2]In 1975-76 Delaware state funds were about 76 percent of the total state plus local revenues compared to only 45 percent in California.

[3]The conclusions regarding the results of the Kansas study are tentative.

[4]Serrano v. Priest, 96 Cal. Reporter 601, 487 P.2nd 1241 (1971). L.A. 30398, Super. Ct. No. C938254 (1976).

[5]San Antonio Independent School District v. Rodriguez, 337 F. Supp. 280 (1971), rev'd.--U.S.--36 L.Ed. 2nd 16 (1973).

[6]An alternative attack on educational finance schemes came out of the 1973 Robinson v. Cahill case [Robinson v. Cahill, 118 N.J. Super. 223, 287 A. 2nd 187 (1972); aff'd., 303 A. 2nd 273 (1973)], which was decided by the New Jersey Supreme Court. The court held that the New Jersey school finance system violated the New Jersey constitution's thorough and efficient clause which guarantees sufficient educational quality to prepare students for the ordinary duties of citizenship. Thus, the legal focus of current school finance litigation is on both "equal protection" and "minimum quality" provisions in state constitutions. However, certain possibilities for future federal action do exist where: (1) educational opportunity in the absolute sense is not being provided, (2) education is insufficient to allow people to avail themselves of First Amendment rights, (3) race discrimination with intent can be shown, and (4) suspect classifications associated with school districts can be ascertained.

[7]It can be shown that the district "power equalizing" approach (see Coons, Clune and Sugarman, 1970) will not, in general, achieve wealth neutrality by satisfying equation (6). The power equalizing formula for district i can be written as $SA_i = EN_i[r_i(W_s - W_i)]$ where $SA_i$ is state aid, $EN_i$ is some enrollment measure, $r_i$ is the local tax rate. $W_i$ is local wealth, and $W_s$ is a measure of wealth in the base district (e.g., state average wealth or wealth of the richest district, etc.). For a dollar increase in total educational expenditure, local expenditure rises by $\Delta r \cdot W_i$ and state aid by $m_i$ where $m_i = EN_i[W_s - W_i]\Delta r$. Therefore $m_i = 1 - \Delta r\, W_i$ which in Feldstein's notation implies $m_i = 1 - kW_i$ or a price formula of $P_i = kW_i$ from equation (2) where $\gamma_{pW} = 1$. This value for $\gamma_{pW}$ will satisfy equation (6) and achieve wealth neutrality only in the special case where the wealth and price elasticities are equal in absolute value.

[8]See Hickrod, Hubbard, Yang, and Rasonond (1976) for a discussion of problems associated with the Census files. Serious problems arise from the fact that the income data are for 1969, while our pooled cross-section time series regression results are for the period 1970-1976. In order to allow for income growth it was assumed that the district average family income grew over time at the same real rate as the national growth in median family income. (See Economic Report of President, 1977.)

[9]The vast majority of state aid in Delaware is distributed on a flat grant unit basis where a regular elementary unit consists of 25 students, while a regular secondary unit is composed of 20 students. Additionally, there are various other units associated with special education, vocational education, etc.

[10]Conceptually, Division III funds are categorical matching grants with a ceiling, but act as block grants since districts historically have accepted all funds for which they are eligible. That is, they have no price effects.

[11]Several authors (see, for example, Ladd) have suggested that it might be possible for states such as Delaware without a history of matching-grant schemes to estimate their own matching-rate price elasticity, $\beta_2$. To do so requires the adoption of the median voter model of public choice and data on median income and tax-share. We are currently exploring the feasibility of this approach, particularly in light of the relatively high price elasticity (in absolute value) found by Feldstein.

[12]Feldstein's basic estimate of $\beta_2 = -1.00$ is actually one of several estimates of $\beta_2$, each based on a different data sample. The estimates range from -0.94 to -1.246.

[13]Income neutrality is also of significance if states employ a system where the income tax serves as a major source of funds for public education.

[14]The coefficients may differ over time as well. The results of an extensive series of covariance tests for structural changes over time indicate that the adjusted total wealth elasticities are stable over the seven fiscal years of data available in Delaware. These experiences may or may not be repeated in other states or in Delaware in the future.

[15]The coefficients of the additive variables measuring the logarithms of property values per need unit and average family income are the wealth elasticities associated with the omitted category (i.e., the nine remaining rural districts in Kent and Sussex Counties form the constant term in the regression). To obtain the wealth elasticities for other districts one must add to that the slope-dummy coefficient for the group of districts of interest. For instance, the wealth elasticity (in terms of property values) for the New Castle County districts outside Wilmington, is, in Column 1 of Table 3, equal to .25 (.11 + .14).

[16]The negative wealth elasticities obtained for Wilmington are not as disturbing (or surprising) as might seem to be the case at first glance since they are total effects -- not behavioral partial effects.

[17]One encouraging note along these lines and mentioned earlier is that it is our experience that for a particular subgrouping of districts, the estimated $\beta_W$'s are fairly stable over time.

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Appendix

## Fiscal Neutrality in Delaware and Three States that Employ District Power Equalizing Schemes: A Comparison

A recent study of school finance reform in the U.S. by Thomas Yang (1975) provides a slightly different kind of comparison to that done for Delaware and Massachusetts. Table A-1 exhibits the elasticities of local plus state revenue receipts with respect to property wealth. The wealth elasticities are derived from a log linear regression of local plus state revenue receipts on assessed values of property where each variable is weighted by need units. Note that the dependent variable is different from that in the earlier regressions where expenditures per need unit served as the dependent variable. Such an adjustment was required so that the Delaware results would be comparable to the Yang estimates. His wealth elasticities for Illinois, Michigan, and Kansas school districts are shown for the 1972-73, 1973-74, and 1974-75 school years. Our estimates for Delaware appear at the bottom of the table.

Before noting the highlights of Table A-1, two statements about the financing schemes of the states included in the comparison are of interest. In 1973 Illinois, Michigan, and Kansas shifted to a power equalizing system from foundation state funding schemes. Yang was estimating the equation to try to determine if these reforms had had an equalizing effect. Even with the power equalizing schemes, though, in 1976 state revenues as a percentage of state and local revenues in Michigan, Illinois, and Kansas are approximately 41%, 52%, and 40% respectively. These are relatively low compared to the 76% figure for Delaware.

The question of interest is "How does fiscal neutrality in Delaware, a state contributing a large percentage of district total revenues but only a small amount of which is distributed on an equalizing basis, compare with that of the three states mentioned above where state contributions are relatively smaller but more likely to be on an equalizing basis?" With the exception of the elasticities for high school districts in Illinois, the Delaware educational finance scheme appears less fiscally neutral than those in Illinois and Michigan. Delaware does compare favorably to all but the largest school districts in Kansas; but this result may be due in part to the definition of wealth employed in Kansas. Wealth there is defined as the sum of equalized assessed valuations plus taxable income in the districts. When we inserted average family income (admittedly not identical to the Kansas measure) the Delaware estimates are very similar to the Kansas results for the two smallest school districts, in terms of enrollment (see footnote c of Table A-1).

While these findings are of interest, we would like to make comparisons where it is known that the dependent and independent variables are defined consistently across states. It is our experience with the Delaware data that even intrastate consistency is difficult to attain. Thus, several adjustments in the Illinois data, etc., may be necessary to make these interstate comparisons more meaningful. However, these results, as those in the previous section, suggest that large state shares of district revenues do not guarantee fiscal neutrality.

Table A-1

Fiscal Neutrality Criterion:
Bivariate Regression of Local
Plus State Revenue on District Wealth[a]

(Variables Weighted by Need Units)[b]

| Year | 1972-73 | 1973-74 | 1974-75 |
|---|---|---|---|
| State | | | |
| Illinois Districts: | | | |
| Elementary | .28 | .25 | .23 |
| High Schools | .45 | .40 | .35 |
| Unit | .22 | .18 | .13 |
| Michigan Districts: | .23 | .14 | .14 |
| Kansas Districts: | | | |
| Under 400 Pupils | .47 | .42 | .41 |
| 400-1299 Pupils | .44 | .37 | .31 |
| 1300 and Up | .23 | .19 | .14 |
| Delaware Districts:[c] | .30 | .30 | .26 |

[a]In Illinois, Michigan, and Delaware district wealth is the adjusted assessed valuation of properties which are taxable for school purposes. The wealth measure for Kansas is the sum of equalized assessed valuations and taxable income.

[b]The need units are state pupil membership in Michigan, district enrollment in Kansas, Title I weighted average daily attendance in Illinois, and finally, state units for Delaware.

[c]The elasticities in Delaware for the 1969-70, 1970-71, and 1975-76 are respectively .295, .298, and .245. When average family income is used to measure wealth the elasticities are:

| 1969-70 | 1970-71 | 1971-72 | 1972-73 | 1973-74 | 1974-75 | 1975-76 |
|---|---|---|---|---|---|---|
| .411 | .453 | .473 | .453 | .467 | .465 | .453 |

# AN EVALUATION OF THE DELAWARE STATE PUBLIC ELEMENTARY AND SECONDARY EDUCATIONAL EQUALIZATION LAWS

Volume V

## The Property Tax: Is it Equitable?

Prepared for the Department of Public Instruction to fulfill requirements set forth in PL93-380.

In this portion of the report, we examine the property tax as it is currently administered in Delaware. In particular, we shall be interested in documenting the equity and/or inequity of the property tax in its role 1) as a source of funding the local share of school expenditures and 2) as an integral part of the state funding of schools in Delaware inasmuch as market values of property, as derived from county assessments, form an important component in the Division III formula. In the discussion which follows data are presented which allow examination of the issues of inter and intra district inequities in assessment-sales ratios. These ratios are used to compare district property wealth under the current system to that which would exist if "actual" property values were in effect. The analysis shows that in Delaware the differences between currently used property values (i.e., those used by DPI in calculating Division III entitlements) and actual property values among districts are substantial. Thus, since the state does not base its Division III allocation on "equalized" property values, the property tax may be susceptible to legal challenge.

As part of the project, An Evaluation of the Delaware State Public Elementary and Secondary Educational Equalization Laws, various pieces of data were collected from the assessment offices in each of the three counties in Delaware. Assessment-sales ratio data were obtained from Kent and New Castle Counties for

the 1973-1976 time period. Because of the recently completed reassessment in Sussex County, we only recently gained access to the Sussex assessor's office and thus were able to obtain transaction data only for 1976. This last fact should be kept in mind in analyzing the data. Thus, the 1976 data do not reflect the reassessment on Sussex County. The transaction data permitted the calculation of inter and intra district differences in assessment-sales ratios by type of property (e.g., industrial, commercial, residential, etc.). The latter breakdown is necessary in order to make inferences regarding the property tax as it affects the funding of public elementary and secondary education.

Table V-1 presents results for "Assessment-to-Market Value Ratios by District and County." The district average is computed by averaging the assessment-sales ratios by property type where the particular assessment-sales ratio for each type of property is weighted by the proportion of total assessed value accounted for by the type of property in question. These weights were derived from the results in Table V-2 which shows the dollar value of assessments by property type.

Several findings are of interest in Table V-1. First, there is a substantial amount of <u>interdistrict</u> variation in assessment-sales ratios even within counties. The low and high ratios in New Castle, Kent, and Sussex Counties are respectively 46%-70%, 35%-47% and 28%-44%. In addition, there are substantial <u>intercounty</u> differences in the averages. The averages for Kent,

New Castle, and Sussex Counties are 52%, 36%, and 35% respectively. These county averages point to an important shortcoming of the method employed by the Department of Public Instruction for calculating each district's Division III entitlement. In that procedure assessment-sales ratios of .7, .6, and .5 are employed for New Castle, Kent and Sussex Counties. In light of the results in Table V-1, the .7, .6, and .5 ratios are clearly inappropriate. Applying these ratios would be correct only if each of the counties had observed ratios which manifested the same relative degree of underassessment. But Kent and Sussex County, because of the less recent reassessments (recall that the 1976 figures for Sussex County are prior to the reassessment on that county) are relatively more undervalued. Consequently, using the .7, .6, and .5 ratios as is currently done, gives more funds to school districts in Kent and Sussex County than would be the case if equalized ratios were used. In effect, the current practice makes the lower counties look poorer than they actually are. This fact is demonstrated later in the report.

Table V-2 presents the breakdown of the dollar value of assessments by property types for New Castle, Kent and Sussex Counties respectively. The basic points to note are twofold. First, the commercial and industrial components as a percentage of total assessments vary significantly across districts. Second, commercial and industrial property is unevenly distributed between counties. Districts which are well endowed with commercial and industrial property will, of course, find it relatively more

easy to generate a given level of expenditures per pupil than other districts. As expected, New Castle County districts tend to have relatively more commercial and industrial property. The percentage breakdowns by property type for each district constitute the weights which are used to derive the assessment-sales ratios shown in Table V-1.

Table V-3 presents the average assessment ratios by district as well as by property type--residential, commercial, industrial, and farm. The first point of interest is that even for residential property, the easiest type to assess, there is substantial inter-district variation in assessment-sales ratios. Second, commercial and industrial properties are, in general, assessed at a higher proportion of market values. The last point is especially relevant in light of a recent court decision in Pennsylvania where it was determined that commercial and industrial properties may not be assessed at a higher proportion of market value than residential properties. The results for commercial and industrial properties though must be qualified because of the lack of a sufficient number of transactions in some of the school districts for these property types. In such situations, average assessment-sales ratios were calculated based on several years of transactions for commercial and industrial properties.

Table V-4 exhibits the intradistrict variations in assessment-sales ratios for single family homes. This category differs from the residential classification in Table V-3 in that residential includes trailers and apartments. Columns 1-3 contain the mean, standard deviation (see note to the table for the

definition of this measure of dispersion), and the number of transactions upon which the sample statistics are based. The interpretation of the results can be illustrated by examining the results for Claymont where the mean and standard deviation are .42 and .27 respectively. This means that although the mean is .42, two-thirds of the observations are included in the range .15-.69. Another way of illustrating the wide variations is to note that about one-third of the transactions examined had assessment-sales ratios below .15 or above .69.

The large dispersion in assessment-sales ratios within school districts is notable. Large interdistrict differences within counties suggest that even applying a constant assessment-sales ratio by county is inappropriate. In New Castle County in 1976 the ratios varied from .40 in Alexis I Dupont and Mount Pleasant to .63 in Wilmington. Thus, even within New Castle County, the application of the .7 ratio would understate market values in the surburban districts outside of Wilmington. Similar interdistrict differences exist in Kent (Sussex), where the means range from .32 (.26) in Caeser Rodney (Milford) to .40 (.37) in Lake Forest (Woodbridge).

The large interdistrict differences (shown in Table V-4) for New Castle County in 1976 point up some serious problems associated with the new school district brought about by the desegregation decision. These interdistrict differences are now intra district differences which implies that equals are not being taxed equally in the county. The same phenomenon also

is present within the remaining districts in the state as evidenced by the large standard deviations around the mean assessment-sales ratios. These wide variations in assessment-sales ratios may put the property tax, as it is currently administered in Delaware, on tenuous legal grounds.

Table V-5 documents the changes in assessment-sales ratios for single family properties between 1973-1976 for Kent and New Castle Counties (such comparisons could not be made for Sussex County because the recent reassessment limited our access to the assessment office). In each school district there was a substantial decline in assessment-sales ratios. The largest decline came in districts where property values had increased most rapidly. Thus, it is observed that even over a period as short as three years, the assessment-sales ratios can change substantially. This again points to the need to equalize assessments on a continuing basis between districts for the purposes of distributing equalizing funds from the state to local school districts. Applying the .7, .6, and .5 ratios is likely to result in an inequitable distribution of Division III funds.

Table V-6 takes a different perspective on the assessment-sales ratio issue. Up to this point, ratios by type have been examined without regard to the possibility of differential ratios <u>within</u> a property type. The results in Table V-6 categorize single family properties by <u>market value</u>. The pattern of assessment-sales ratios by market value appears to be one which in the main is U-shaped. Lower valued properties seem to to be assessed at the highest proportion of market value with

the ratios declining in more expensive properties. In some districts, but certainly not all, there is a slight increase in the assessment-sales ratio for the most expensive single family properties ($50,000 and above). Once again, the results are suggestive of inequities in the property tax as it is currently administered in Delaware.

The policy implications of these results are discussed in detail in Volume VIII. Our main policy proposal is that <u>at a minimum</u>, the state should institute a tax equalization board that would have as its main goal the equalization of assessment-sales ratios <u>between</u> districts. A more appropriate method, although potentially less politically feasible, of obtaining uniformity in assessment procedures would be to have the state take over the business of property assessments. The latter approach would not only provide for equalizing assessments between districts but also would eliminate the widespread intra-district variations in assessment-sales ratios observed in the state. The state tax equalization board is not capable of correcting <u>intra</u> district inequities in assessments.

TABLE V-1: Assessment-to-Market Value Ratios by District and County (weighted average over all property, 1976[a])

| District | Weighted Assessment-to-Market Value Ratio | |
|---|---|---|
| New Castle County | | |
| Claymont | .50 | |
| Alexis I. duPont | .47 | |
| Alfred I. duPont | .46 | |
| Marshallton-McKean | .50 | |
| Appoquinimink | .55 | |
| De La Warr | .52 | |
| Mount Pleasant | .48 | |
| Newark | .51 | |
| New Castle-Gunning Bedford | .50 | |
| Smyrna[b] | .55 | |
| Stanton | .49 | |
| Wilmington | .70 | |
| Conrad Area | .49 | |
| Average | | .52 |
| Kent County | | |
| Smyrna | .38 | |
| Capital | .43 | |
| Caesar Rodney | .35 | |
| Lake Forest | .47 | |
| Woodbridge[c] | .36 | |
| Milford[c] | .35 | |
| Average | | .36 |

TABLE V-1
Continued

| District | Weighted Assessment-to-Market Value Ratio | | |
|---|---|---|---|
| Sussex County[d] | | | |
| Indian River | .35 | | |
| Laurel | .29 | | |
| Seaford | .30 | | |
| Milford[e] | .28 | | |
| Woodbridge[e] | .34 | | |
| Cape Henlopen | .32 | | |
| Delmar | .44 | | |
| Average | | .35 | |
| State Average | | | .49 |

[a]In some cases where there was insufficient 1976 observations, data from 1973-1976 were used to calculate the means. The district average is an average of the assessment-to-market value ratios on property category weighted by the total assessed value of property in each category. (For New Castle and Sussex the categories are residential, commercial, industrial and farm; for Kent they are residential and farm, commercial, and industrial.) For county averages each district average is weighted by total district assessed value, and the state average weighs each county by its total assessed value.

[b]New Castle part only.

[c]Kent County part only.

[d]Prior to county wide reassessment in Sussex County.

[e]Sussex County part only.

TABLE V-2: Total Assessments by Property Type, New Castle County, 1976

| Districts | Assessments (thousands of dollars), Percents of District or County Totals in Parentheses | | | | |
|---|---|---|---|---|---|
| | Residential | Commercial | Industrial | Farm | Total[a] |
| Claymont | 58,779 (61.1%) | 19,717 (20.5%) | 17,587 (18.3%) | 74 (.1%) | 96,157 |
| Alexis I. duPont | 154,128 (71.8%) | 12,986 (6.1%) | 39,711 (18.5%) | 7,699 (3.6%) | 214,524 |
| Alfred I. duPont | 293,141 (77.1%) | 67,918 (17.9%) | 16,726 (4.4%) | 2,372 (.6%) | 380,156 |
| Marshallton-McKean | 85,037 (73.6%) | 15,078 (13.1%) | 14,513 (12.6%) | 855 (.7%) | 115,483 |
| Appoquinimink | 29,822 (43.0%) | 6,439 (9.3%) | 7,576 (10.9%) | 25,498 (36.8%) | 69,483 |
| De La Warr | 33,407 (52.1%) | 13,380 (20.9%) | 17,274 (27.0%) | 0 | 64,060 |
| Mount Pleasant | 151,166 (81.9%) | 17,822 (9.7%) | 15,518 (8.4%) | 86 (.05%) | 184,591 |
| Newark | 325,556 (69.9%) | 54,144 (11.6%) | 75,304 (16.2%) | 11,059 (2.4%) | 466,062 |
| New Castle-Gunning Bedford | 161,703 (68.7%) | 24,741 (10.5%) | 40,631 (17.3%) | 8,406 (3.6%) | 235,481 |
| Smyrna[b] | 8,297 (46.6%) | 637 (3.6%) | 1,560 (8.8%) | 7,329 (41.1%) | 17,824 |
| Stanton | 115,888 (75.7%) | 28,419 (18.6%) | 6,777 (4.4%) | 2,095 (1.4%) | 153,180 |
| Wilmington | 174,912 (43.5%) | 151,459 (37.6%) | 75,922 (18.9%) | 0 | 402,294 |
| Conrad Area | 104,510 (68.2%) | 20,722 (13.5%) | 27,851 (18.2%) | 84 (.05%) | 153,167 |
| County Total | 1,696,344 (66.5%) | 433,462 (17.0%) | 356,948 (14.0%) | 65,557 (2.6%) | 2,552,311 |

TABLE V-2: Total Assessments, Kent County, 1976

| | Assessments (thousands of dollars), Percents of District or County Totals in Parentheses | | | |
|---|---|---|---|---|
| | Residential and Farm | Commercial | Industrial | Total[a] |
| Smyrna[c] | 32,439 (82.9%) | 2,486 (6.4%) | 4,216 (10.8%) | 39,141 |
| Capital | 91,143 (65.7%) | 24,972 (18.0%) | 22,653 (16.3%) | 138,768 |
| Caesar Rodney | 58,542 (90.5%) | 1,892 (2.9%) | 4,257 (6.6%) | 64,691 |
| Lake Forest | 32,959 (79.2%) | 2,725 (6.5%) | 5,930 (14.3%) | 41,614 |
| Woodbridge[c] | 3,048 (89.5%) | 10 (.3%) | 347 (10.2%) | 3,405 |
| Milford[c] | 18,400 (72.8%) | 4,839 (19.1%) | 2,049 (8.1%) | 25,288 |
| County Total | 236,531 (75.6%) | 36,924 (11.8%) | 39,452 (12.6%) | 312,907 |

TABLE V-2: Total Assessments, Sussex County, 1976

| Districts | Assessments (thousands of dollars), Percents of District or County Totals in Parentheses | | | | |
|---|---|---|---|---|---|
| | Residential | Commercial | Industrial | Farm | Total[a] |
| Indian River | 109,469 (73.9%) | 5,351 (3.6%) | 10,064 (6.8%) | 23,222 (15.7%) | 148,106 |
| Laurel | 12,374 (54.9%) | 612 (2.7%) | 2,173 (9.6%) | 7,365 (32.7%) | 22,524 |
| Seaford | 33,844 (66.3%) | 3,007 (5.9%) | 4,348 (8.5%) | 9,874 (19.3%) | 51,073 |
| Milford[d] | 16,130 (63.5%) | 1,050 (4.1%) | 2,559 (10.5%) | 5,574 (21.9%) | 25,413 |
| Woodbridge[d] | 13,667 (71.2%) | 436 (2.3%) | 2,186 (11.4%) | 2,916 (15.2%) | 19,205 |
| Cape Henlopen | 92,254 (86.3%) | 3,661 (3.4%) | 2,179 (2.0%) | 8,768 (8.2%) | 106,862 |
| Delmar | 3,879 (40.0%) | 447 (4.6%) | 1,849 (19.1%) | 3,515 (36.3%) | 9,690 |
| County Total | 281,617 (73.6%) | 14,564 (3.8%) | 25,458 (6.6%) | 61,234 (16.0%) | 382,873 |

Summation may not equal totals due to rounding.

[a]Net of tax-exempt properties. Figures are derived from county sources. The totals do not equal the assessed valuation of real estate in Table 51, Report of Educational Statistics, 1976-1977. We have not attempted to reconcile the small differences given our intention to highlight the breakdown of assessed values by property type.

[b]New Castle part only.

[c]Kent part only.

[d]Sussex part only.

TABLE V-3: Average Assessment to Market Value Ratios for 1976 by Property Type (average ratios with the number of observations in parentheses)

| | Residential | Commercial[a] | Industrial[a] | Farm[a] |
|---|---|---|---|---|
| New Castle County | | | | |
| Claymont | .42 (69) | .56 (20) | --- | --- |
| Alexis I. duPont | .39 (149) | .61 (7) | --- | .59 (34) |
| Alfred I. duPont | .41 (384) | .61 (17) | --- | .68 (19) |
| Marshallton-McKean | .44 (138) | .63 (20) | --- | .53 (10) |
| Appoquinimink | .48 (94) | .66 (21) | --- | .56 (77) |
| De La Warr | .49 (127) | .68 (14) | .44 (6) | --- |
| Mount Pleasant | .43 (188) | .68 (28) | --- | --- |
| Newark | .43 (806) | .60 (49) | .65 (10) | .71 (57) |
| New Castle-Gunning Bedford | .42 (363) | .67 (47) | --- | .67 (39) |
| Smyrna | .50 (25) | .66 (5) | --- | .57 (59) |
| Stanton | .43 (250) | .69 (20) | --- | .58 (12) |
| Wilmington | .62 (567) | .78 (363) | .72 (24) | --- |
| Conrad Area | .43 (268) | .54 (51) | --- | --- |
| County Average | .46 (3428) | .67 (662) | .72 (61) | .61 (312) |

TABLE V-3: Cont.

| | Residential | Commercial | Industrial | Farm |
|---|---|---|---|---|
| Kent County | | | | |
| Smyrna | .31<br>(246) | .45[a]<br>(7) | --- | .22<br>(73) |
| Capital | .32<br>(577) | .39<br>(18) | .86[a]<br>(6) | .29<br>(114) |
| Caesar Rodney | .29<br>(386) | .43<br>(5) | --- | .27<br>(115) |
| Lake Forest | .40<br>(208) | .48[a]<br>(9) | --- | .39<br>(125) |
| Woodbridge | .37[b]<br>(14) | --- | --- | .31<br>(13) |
| Milford | .29<br>(89) | .29[a]<br>(6) | --- | .28<br>(44) |
| County Average | .32<br>(1520) | .41<br>(45) | .77[a]<br>(7) | .30<br>(484) |
| Sussex County | | | | |
| Indian River | .35<br>(267) | --- | --- | .25<br>(74) |
| Laurel | .39<br>(72) | --- | --- | .23<br>(21) |
| Seaford | .27<br>(151) | .26<br>(7) | --- | .29<br>(36) |
| Milford | .26<br>(109) | --- | --- | .27<br>(26) |
| Woodbridge | .36<br>(50) | --- | --- | .21<br>(34) |
| Cape Henlopen | .36<br>(211) | --- | --- | .24<br>(37) |
| Delmar | .47<br>(28) | --- | --- | .16<br>(23) |
| County Average | .34<br>(888) | .25<br>(11) | --- | .24<br>(251) |

Where a sufficient number of transactions was not available, no average was computed.

[a]Includes 73-76.

[b]Includes 75-76.

TABLE V-4: Intradistrict Variations in Assessment-to-Market Value Ratios[a] (standard deviations for single family properties, 1976)

| District | Mean | Standard Deviation[b] | Number of Transactions |
|---|---|---|---|
| New Castle County | | | |
| Claymont | .42 | .27 | 67 |
| Alexis I. duPont | .40 | .09 | 135 |
| Alfred I. duPont | .41 | .06 | 366 |
| Marshallton-McKean | .42 | .14 | 131 |
| Appoquinimink | .49 | .25 | 59 |
| De La Warr | .48 | .27 | 122 |
| Mount Pleasant | .40 | .09 | 173 |
| Newark | .42 | .10 | 726 |
| New Castle-Gun. Bed. | .41 | .14 | 342 |
| Smyrna[c] | .52 | .48 | 11 |
| Stanton | .41 | .06 | 220 |
| Wilmington | .63 | .39 | 498 |
| Conrad Area | .42 | .24 | 260 |
| Average (weighted)[d] | .45 | .17 | 3110 |
| Kent County | | | |
| Smyrna | .35 | .16 | 171 |
| Capital | .33 | .12 | 467 |
| Caesar Rodney | .32 | .14 | 266 |
| Lake Forest | .40 | .27 | 132 |
| Woodbridge[e] | .32 | .10 | 5 |
| Milford[e] | .32 | .14 | 64 |
| Average (weighted)[d] | .34 | .15 | 1105 |

TABLE V-4
Continued

| District | Mean | Standard Deviation | Number of Transactions |
|---|---|---|---|
| Sussex County | | | |
| Indian River | .36 | .18 | 123 |
| Laurel | .33 | .20 | 47 |
| Seaford | .29 | .34 | 102 |
| Milford[f] | .26 | .13 | 75 |
| Woodbridge[f] | .37 | .28 | 32 |
| Cape Henlopen | .32 | .25 | 102 |
| Delmar | .33 | .26 | 15 |
| Average (weighted)[d] | .32 | .23 | 496 |
| State Average (weighted)[d] | .41 | .17 | 4711 |

[a]The "single family" class of properties is not the same as "residential" properties where there are apartment or trailer transactions.

[b]Standard Deviation = $\sqrt{\frac{\sum_{i=1}^{n} (X_i - \bar{X})^2}{n-1}}$,

where the $X_i$ = the observed values of assessed-to-market value ratios, $\bar{X}$ is the sample average, and n is the sample size.

[c]New Castle part only.

[d]Weighted by the number of transactions.

[e]Kent part only.

[f]Sussex part only.

TABLE V-5: Changes in Assessment-to-Market Value Ratios from 1973 to 1975 on Single-Family Properties

| Districts | Assessment-to-Market Value Ratio | | |
|---|---|---|---|
| | 1973 | 1976 | Percent Change |
| New Castle County | | | |
| Claymont | .45 | .42 | - 7.1 |
| Alexis I. duPont | .51 | .40 | -27.5 |
| Alfred I. duPont | .49 | .41 | -19.5 |
| Marshallton-McKean | .48 | .42 | -14.3 |
| Appoquinimink | .61 | .49 | -24.5 |
| De La Warr | .52 | .48 | - 8.3 |
| Mount Pleasant | .48 | .40 | -20.0 |
| Newark | .49 | .42 | -16.7 |
| New Castle-Gunning Bedford | .53 | .41 | -29.3 |
| Smyrna[a] | c | .52 | --- |
| Stanton | .48 | .41 | -17.1 |
| Wilmington | .69 | .63 | - 9.5 |
| Conrad Area | .51 | .42 | -21.4 |
| County Average (weighted)[d] | .52 | .44 | -18.2 |
| Kent County | | | |
| Smyrna | .43 | .35 | -22.9 |
| Capital | .40 | .33 | -21.2 |
| Caesar Rodney | .43 | .32 | -34.4 |
| Lake Forest | .49 | .40 | -22.5 |
| Woodbridge | c | c | --- |

TABLE V-5
Continued

| Districts | Assessment-to-Market Value Ratio | | |
|---|---|---|---|
| | 1973 | 1976 | Percent Change |
| Delmar[e] | .44 | .32 | -37.5 |
| County Average (weighted)[d] | .43 | .34 | -26.5 |
| Sussex County | | Insufficient Data[f] | |

[a]The "single family" class of properties is not the same as "residential" properties where there are apartment or trailer transactions.

[b]New Castle part only.

[c]Insufficient number of transactions to make estimate.

[d]Weighted by the assessed value.

[e]Kent part only.

[f]For Sussex County only 1976 data were collected due to budgeting reasons.

TABLE V-6: Assessment to Market Value Ratios of Single Family Properties by Market Value Class[a]

| | Market Value Class (thousands of dollars) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 0-5 | 5-10 | 10-15 | 15-20 | 20-25 | 25-30 | 30-40 | 40-50 | 50+ | Average |
| New Castle County | | | | | | | | | | |
| Claymont | 1.01 (7) | .75 (18) | .47 (25) | .45 (26) | .46 (23) | .39 (77) | .40 (214) | .39 (54) | .48 (11) | .43 (456) |
| Alexis I. duPont | 1.21 (5) | .71 (6) | .48 (22) | .75 (28) | .85 (25) | .81 (22) | .55 (62) | .42 (99) | .44 (466) | .49 (735) |
| Alfred I. duPont | .69 (9) | .68 (24) | .76 (16) | .73 (15) | .76 (11) | .52 (38) | .46 (293) | .43 (619) | .44 (1050) | .45 (2075) |
| Marshallton-McKean | .98 (20) | .82 (20) | .72 (28) | .51 (33) | .44 (80) | .40 (114) | .41 (224) | .39 (68) | .47 (240) | .46 (828) |
| Appoquinimink | .82 (64) | .53 (98) | .67 (52) | .57 (34) | .56 (33) | .52 (39) | .45 (93) | .46 (32) | .45 (57) | .56 (502) |
| De La Warr | 1.07 (30) | .79 (60) | .59 (76) | .45 (136) | .40 (141) | .39 (93) | .37 (23) | .67 (1) | .61 (15) | .52 (575) |
| Mount Pleasant | .87 (23) | .72 (14) | .69 (41) | .44 (90) | .43 (51) | .42 (69) | .41 (232) | .43 (275) | .45 (267) | .45 (1063) |
| Newark | .82 (57) | .66 (98) | .60 (106) | .54 (88) | .50 (464) | .46 (1089) | .43 (1562) | .43 (630) | .44 (501) | .46 (4597) |
| New Castle-Gunning Bedford | 1.00 (89) | .69 (87) | .64 (52) | .49 (135) | .44 (261) | .44 (472) | .45 (722) | .44 (222) | .52 (65) | .49 (2106) |
| Smyrna | .71 (31) | .63 (43) | .71 (17) | .68 (10) | .58 (9) | .46 (10) | .41 (11) | .35 (8) | .48 (19) | .60 (158) |
| Stanton | .85 (33) | .59 (37) | .52 (12) | .65 (5) | .57 (47) | .49 (120) | .45 (441) | .43 (401) | .44 (168) | .47 (1266) |

TABLE V-6: Cont.

| | 0-5 | 5-10 | 10-15 | 15-20 | 20-25 | 25-30 | 30-40 | 40-50 | 50+ | Average |
|---|---|---|---|---|---|---|---|---|---|---|
| Wilmington | 1.23 (334) | .90 (532) | .59 (697) | .53 (562) | .50 (282) | .45 (168) | .47 (166) | .46 (94) | .51 (242) | .67 (3078) |
| Conrad Area | .97 (24) | .99 (55) | .71 (68) | .49 (173) | .42 (253) | .39 (328) | .39 (276) | .42 (41) | .46 (35) | .47 (1253) |
| County Average | 1.05 (726) | .79 (1092) | .61 (1212) | .51 (1335) | .47 (1680) | .44 (2639) | .43 (4319) | .43 (2544) | .45 (3136) | .50 (18,692) |
| Kent County | | | | | | | | | | |
| Smyrna | .37 (272) | .37 (182) | .31 (74) | .34 (71) | .34 (77) | .25 (173) | .30 (73) | .33 (42) | .24 (95) | .32 (1059) |
| Capital | .45 (343) | .34 (221) | .38 (157) | .36 (172) | .34 (208) | .30 (263) | .28 (384) | .28 (159) | .26 (176) | .34 (2085) |
| Caesar Rodney | .43 (449) | .28 (248) | .32 (101) | .34 (130) | .29 (120) | .26 (159) | .30 (168) | .26 (104) | .23 (120) | ..33 (1599 |
| Lake Forest | .54 (401) | .38 (230) | .36 (111) | .34 (85) | .23 (114) | .24 (131) | .22 (62) | .25 (35) | .17 (56) | .38 (1225) |
| Woodbridge | .85 (36) | .36 (21) | .22 (8) | .30 (5) | .32 (2) | .19 (6) | .41 (6) | .21 (2) | .14 (10) | .49 (96) |
| Milford | .42 (182) | .34 (106) | .32 (49) | .32 (35) | .27 (40) | .26 (44) | .28 (33) | .28 (24) | .24 (47) | .34 (561) |
| County Average | .46 (1683) | .34 (1009) | .35 (500) | .34 (498) | .30 (561) | .27 (776) | .29 (726) | .28 (366) | .24 (504) | .34 (6626) |

TABLE V-6: Cont.

| | 0-5 | 5-10 | 10-15 | 15-20 | 20-25 | 25-30 | 30-40 | 40-50 | 50+ | Average |
|---|---|---|---|---|---|---|---|---|---|---|
| Sussex County | | | | | | | | | | |
| Indian River | .44 (91) | .27 (75) | .21 (32) | .34 (15) | .24 (16) | .24 (19) | .27 (29) | .25 (11) | .39 (54) | .33 (342) |
| Laurel | .54 (29) | .36 (24) | .27 (10) | .25 (4) | .15 (8) | .13 (5) | .18 (3) | .24 (2) | .22 (8) | .35 (93) |
| Seaford | .36 (49) | .29 (26) | .26 (18) | .18 (6) | .23 (15) | .25 (26) | .25 (14) | .26 (17) | .17 (23) | .27 (194) |
| Milford | .41 (27) | .29 (36) | .21 (12) | .20 (15) | .20 (9) | .22 (5) | .21 (18) | .13 (4) | .16 (10) | .26 (136) |
| Woodbridge | 1.11 (25) | .27 (20) | .33 (9) | .16 (6) | .20 (11) | .17 (2) | .27 (2) | .21 (4) | .09 (6) | .49 (85) |
| Cape Henlopen | .53 (76) | .27 (35) | .21 (17) | .15 (17) | .21 (15) | .39 (18) | .24 (21) | .27 (9) | .27 (42) | .34 (250) |
| Delmar | .66 (15) | .24 (6) | .18 (6) | .18 (5) | .20 (4) | .28 (6) | --- --- | .14 (5) | .08 (4) | .33 (51) |
| County Average | .52 (312) | .29 (222) | .23 (105) | .22 (68) | .21 (78) | .27 (81) | .24 (87) | .23 (52) | .28 (147) | .33 (1152) |

[a]New Castle and Kent Counties based on 1973-1976 data. Sussex County based on 1976 data.

# AN EVALUATION OF THE DELAWARE STATE PUBLIC ELEMENTARY AND SECONDARY EDUCATIONAL EQUALIZATION LAWS

Volume VI

Efficiency in Size of Delaware School Districts

Prepared for the Department of Public Instruction to fulfill requirements set forth in PL93-380.

## Introduction

In this section of the report we investigate to what extent school districts in the State of Delaware are of efficient size. Equality in educational opportunity requires that any efficiencies in the size and organization of school districts be realized for all pupils. Larger school districts may attain economies by spreading administration, equipment and volume purchasing over more students. Diseconomies may accrue, however, due to increasing costs resulting from transportation, bureaucracy and material storage and distribution within a large district. The pattern of economies and diseconomies as scale changes determines the relationship between education costs per pupil and district size. The optimal size of a school district is the enrollment level at which cost per pupil (i.e., the long run average cost function) reaches a minimum.

In 1967 school districts in Delaware were reorganized resulting in substantial consolidation. Twenty-three school districts were formed with the average district size being 5471 pupils in 1976. There is considerable variation around this average, however, with districts in the state ranging in size from 738 to 16,923 pupils in 1976. For the eleven districts

in the more densely populated northern part of New Castle County (i.e., excluding Appoquinimink), the average size was 7185 pupils in 1976 with a range from smallest to largest of 3172 to 16,923 pupils. Thus, considerable variation exists even within the more homogeneous urban districts. If indeed there is an optimal district size, substantial cost savings may accrue from greater homogeneity in the enrollments of school districts.

There have been numerous studies investigating the existence of scale economies in organizing individual schools, programs, and districts. These studies are characterized by a tremendous diversity in findings depending on several factors, the most important of which include:

1) the level of aggregation of the analysis (e.g., schools vs. districts),
2) the density of the population from which the data are drawn (e.g., rural vs. urban school districts), and
3) the models used in the analysis (e.g., bivariate vs. multivariate regression models).[1]

In general some evidence supporting a U-shaped relationship between cost per pupil and pupils enrolled is found in these studies, but the size at which average cost reaches a minimum

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[1]Representative of previous research on district size include the studies by Hirsch (1960), Hanson (1964), Hettich (1968), Osburn (1970), Keisling (1965), White and Tweeten (1973), Riew (1966), and Cohn (1968). For a review of the literature on scale economies with special emphasis on rural district consolidation see Sher and Tompkins (1976).

varies greatly. For example, Hanson (1964) focusing on urban districts in nine states finds economies of scale up to 50,000 average daily attendance (ADA). In contrast, White and Tweeten (1973), studying rural districts in Oklahoma, conclude that economies of scale are exhausted (i.e., total costs per pupil including transportation begin to rise) at 675 ADA. In addition to the minimum point on the U-shaped long run average cost curve, the curvature or intensity of the relationship is important for policy recommendations concerning school consolidation. White and Tweeten report their relationship to be very flat between 400 and 1100 ADA indicating little potential cost savings in this range.

Analyzing individual public high schools in Wisconsin, Riew (1966) finds decreasing operating expenditures per pupil until high schools reach a size of 1675 pupils in ADA. Focusing on high school districts only in Iowa and Missouri respectively, Cohn (1968) and Osburn (1970) report similar findings with economies of scale being fully exhausted at around 1500 pupils in ADA.

Since efficiency is generally interpreted in the school finance literature to mean minimizing costs for a given output, it is important to statistically control for the quality of schooling inputs and outputs when relating cost per pupil to the size of the educational unit. Quality factors include student achievement scores, class sizes, teacher quality,

diversity of educational program offerings, and instructional materials. In addition, population density of the school district should be controlled for so as to reflect potential changes in transportation costs related to density. By accounting for as many of these quality factors as the data base allows, one has a greater confidence that any relationship between cost per pupil and size of the educational unit represents pure scale effects.

Model and Data

We investigate the question of scale economies for school districts in Delaware by estimating a quadratic relationship between average cost and enrollment for the State's 23 districts in seven school years from 1969-1976. Several variables which reflect differences in educational input and output quality are included in the cost relationship given below.

$$C_{it} = \alpha_0 + \alpha_1 E_{it} + \alpha_2 E_{it}^2 + \sum_{k=1}^{4} b_k X_{ki_t} \qquad (1)$$

where it = district i in year t

C(cost) = cost per pupil (computed as total current expenditure on operations divided by total enrollment; measured in 1970 $)

E(enrollment) = total enrollment in regular and special programs

$X_1$(class size) = average class size for classes K-12 including special education

$X_2$(salary) = average salary (computed as the total current expenses for instruction divided by the total number of instructional personnel measured in 1970 $)

$X_3$(aptitude) = district average test score on a standardized aptitude test (Total aptitude, 4th Grade)

$X_4$(density) = density of the school district (total enrollment divided by the number of square miles of the district)

All data, except observations for $X_3$, are taken from State of Delaware Report of Educational Statistics 1969-76, compiled by the State Board of Education and the Department of Public Instruction. $X_3$ was provided by the Delaware State Department of Public Instruction for the years 1972-1976 with 1972 values used for earlier years where no data are available.

If a quadratic cost per pupil function exists for Delaware school districts, total enrollment (E) will have a negative coefficient ($\alpha_1 < 0$) while enrollment squared ($E^2$) will have a positive coefficient ($\alpha_2 > 0$). Thus for low enrollment levels costs per pupil fall as district size increases and for high enrollment levels costs per pupil rise. The enrollment level where cost per pupil reaches a minimum is defined as the optimal size district.

$X_1$, $X_2$, $X_3$ reflect the quality of the education process. Larger class sizes ($X_1$) should lower per pupil costs (i.e., $b_1 < 0$) whereas higher salaries ($X_2$) are expected to raise costs (i.e., $b_2 > 0$). Higher achievement scores ($X_3$), to the extent that they reflect a higher quality educational program, are expected to raise costs per pupil (i.e., $b_3 > 0$). If, however, higher achievement scores reflect primarily student abilities, then $X_3$ may be inversely related to cost per pupil since high aptitude pupils may be easier and thus less costly to instruct (i.e., $b_3 < 0$).

Population density ($X_4$) is included to reflect transportation cost differences among school districts. More compact districts are expected to incur lower transportation costs and thus lower total costs per pupil (i.e., $b_4 < 0$).

Since seven years of data on 23 school districts were available, the question of pooling data arose at the onset of the statistical analysis. Through the use of covariance analysis within a regression model we determined to what extent it is possible to group 1) all years of data together, as well as 2) districts with different urban versus rural compositions.

Cross section stratifications investigated included 1) urban districts (11 districts in northern New Castle County) and rural districts (12 other state districts, and 2) Wilmington, urban districts (10 northern New Castle County districts except Wilmington), and rural districts. Wilmington was not found to be statistically significantly different from other urban districts although

rural districts were significantly different from urban districts. The test for Structural differences between urban (including Wilmington) and rural equations indicated an F-value of 3.22 which was significant at the .01 level.

Covariance analysis performed with dummy variables representing the year of the observation indicate that additive dummy variables are necessary in the equation although interactions can be omitted. Thus slopes remain constant through time although the intercept of the equation changes.

The equations used to reflect the relationship between cost and enrollment are given in Table VI-1. In addition to the variables specified in equation 1, the equation reported in Table VI-1 includes additive yearly dummy variables (e.g., D71 = 1 for observations from 1971, 0 otherwise, 1970 is the base year). Results for pooling all districts within the state are reported in addition to the estimates for urban and rural districts separately. Since the covariance analysis indicates that slopes can be pooled across years the optimal size district remains the same for all years but differs between urban and rural districts.

Table VI-1 indicates that average class size ($X_1$) and average salary ($X_2$) are important controlling factors in the cost equation. Both variables have the expected sign and are highly significant. The aptitude test score ($X_3$) has a negative coefficient indicating that the variable probably reflects

TABLE VI-1
COEFFICIENT ESTIMATES OF COST PER PUPIL EQUATION
(t-values in parenthesis)

| Variable | All Districts | Urban Districts | Rural Districts |
|---|---|---|---|
| Constant | 1250<br>(14.41) | 1606<br>(9.30) | 1084<br>(11.86) |
| Enrollment (E) | - .01833<br>(-4.75) | - .0230<br>(-3.12) | - .0168<br>(-1.41) |
| Enrollment Squared ($E^2$) | $.7878 \times 10^{-6}$<br>(3.67) | $.1026 \times 10^{-5}$<br>(2.71) | $.1062 \times 10^{-5}$<br>(0.91) |
| Class Size ($X_1$) | - 44.06<br>(-14.31) | - 59.43<br>(-9.35) | - 37.16<br>(-11.09) |
| Salary ($X_2$) | .0623<br>(22.52) | .0645<br>(13.74) | .0615<br>(12.02) |
| Aptitude ($X_3$) | - 1.182<br>(-2.95) | - .1139<br>(-.09) | - 1.260<br>(-2.94) |
| Density ($X_4$) | - .0237<br>(-1.05) | - .0345<br>(-1.02) | - .0158<br>(-0.03) |
| D71 | - 53.26<br>(-3.86) | - 84.08<br>(-3.13) | - 43.82<br>(-2.19) |
| D72 | - 39.13<br>(-1.72) | -123.27<br>(-1.69) | - 29.55<br>(-1.10) |
| D73 | - 82.75<br>(-3.60) | -182.71<br>(-2.46) | - 59.40<br>(-2.09) |
| D74 | -123.89<br>(-5.32) | -234.30<br>(-3.13) | -102.40<br>(-3.41) |
| D75 | -180.97<br>(-7.57) | -304.21<br>(-3.99) | -148.32<br>(-4.76) |
| D76 | -238.80<br>(-9.68) | -368.49<br>(-4.80) | -206.81<br>(-6.04) |
| $R^2$ (adjusted) | .919 | .931 | .846 |
| Standard Error of Regression | 39.34 | 40.67 | 31.15 |
| N | 161 | 77 | 84 |

student input characteristics rather than the output of the educational process. Density ($X_4$) lowers costs as expected although the coefficient is not significant.

The yearly dummy variables indicate a significant downward drift in the cost function over time. This result is somewhat surprising although it is certainly feasible since the costs are measured in constant 1970 dollars and trends in the control variables such as teacher salary, class size, and student aptitude can offset the yearly drift. Rural districts have a smaller downward drift in cost per pupil than urban districts.

The coefficients on enrollment and enrollment squared indicate that a parabolic relationship exists between cost per pupil and the number of pupils in the districts. The relationship is not statistically significant for rural districts however. Furthermore, since interactions between enrollment and enrollment squared with the yearly dummy variables were found to be insignificant, the same parabolic relationship holds for all years. The parabola implied by the regression results for urban districts is plotted in Figure 1 with the optimal size urban district located at the minimum of the parabola. The enrollment given at this minimum is obtained by taking the derivative of equation (1) with respect to enrollment and setting the resulting equation equal to zero. Thus

$$\frac{dC}{dE} = \alpha_1 + 2\alpha_2 E^* = 0$$

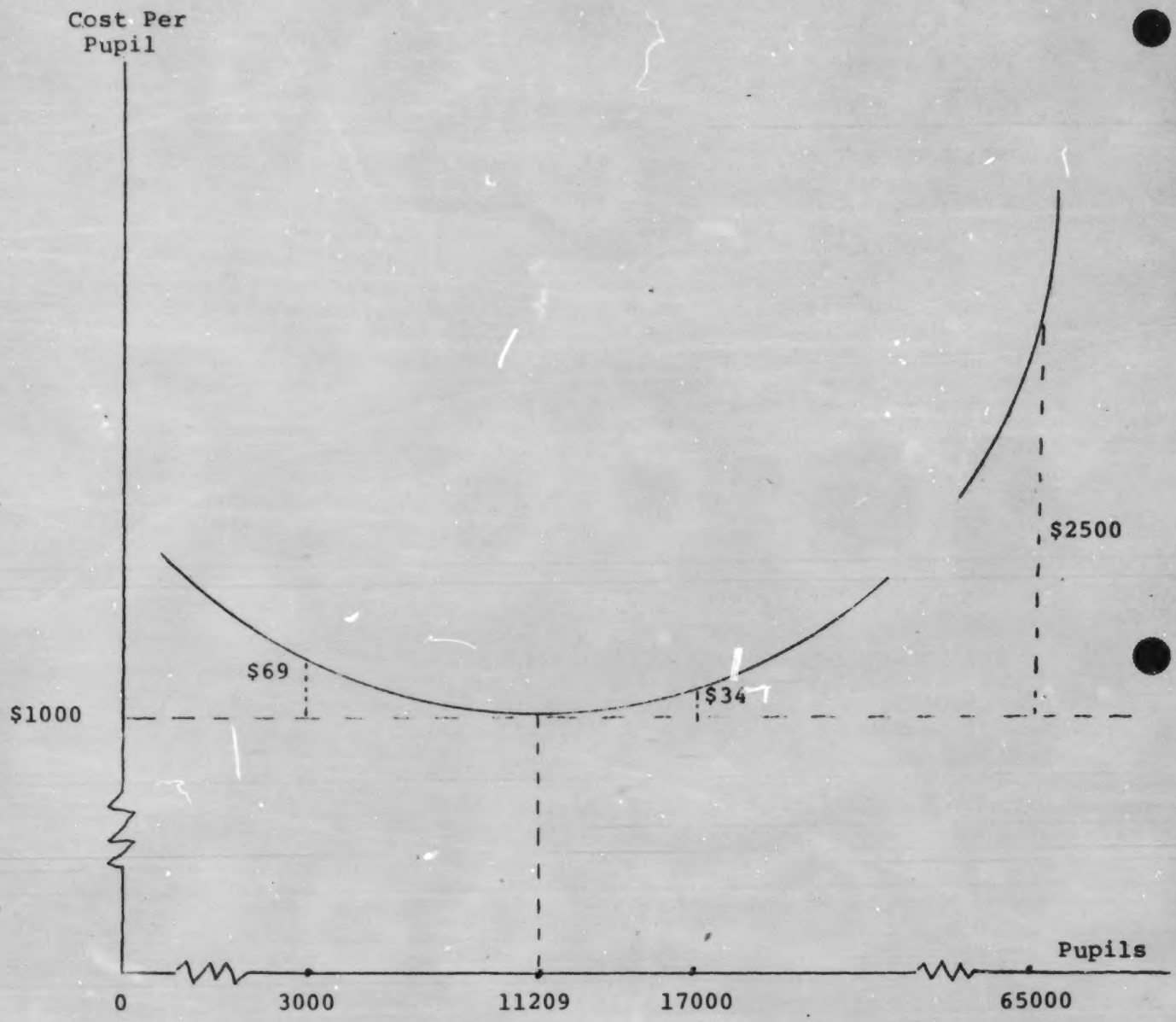


FIGURE 1. COST RELATIONSHIP FOR URBAN DISTRICTS

and $E^* = -\alpha_1/2\alpha_2$,

where E* is the cost minimizing enrollment level. Using the parameter estimates from Table 1 for urban districts, we obtain

$$E^*_{urban} = -(-.0230)/2(.1026 \times 10^{-5}) = 11,209.$$

For rural districts the optimal size is

$$E^*_{rural} = -(-.0168)/2(.1062 \times 10^{-5}) = 7910.$$

The result for rural districts should not provide the basis for any policy decisions however, since the parabolic relationship is not statistically significant.

The cost per pupil at the minimum of the parabola is approximately $1000 (in 1970 dollars) in Figure 1. The actual height depends on the level of all the other variables in the regression equation. We now investigate the sensitivity of cost per pupil to enrollment changes. This sensitivity does not depend on the level of the control variables and is shown in Figure 1. It is clear that cost per pupil does not vary greatly within the size range of presently constituted urban districts (i.e., from approximately 3000 to 17,000 pupils in 1976). The total dollar savings, however, can be significant. For example, a $25 savings per pupil (this is implied if the average urban district size of 7185 pupils in 1976 were to change to 11,209) translates into more than $1.6 million for the 65,000 students

residing in the 11 urban districts.

If, however, the estimated parabola is extrapolated far beyond the existing district size range, costs do escalate. For example, the increased cost per pupil associated with the consolidated desegregation district mandated by the Courts for New Castle County is estimated at approximately $2500 per student from our results. This doubtless exaggerates the potential cost increase since it relies on an extrapolation far beyond historically observed values from which the regression equation was estimated. It does suggest a note of caution however.

In conclusion there seems to be little evidence that would support a policy of restructuring school districst in Delaware in order to achieve size efficiencies. For rural districts there seems to be a weak relationship between cost per pupil and size. For urban districts, although the traditional quadratic relationship is highly significant, the impact on cost per pupil of restructuring districts would be small unless large changes in district size take place.

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# AN EVALUATION OF THE DELAWARE STATE PUBLIC ELEMENTARY AND SECONDARY EDUCATIONAL EQUALIZATION LAWS

Volume VII

Equal Opportunity in Special Education

Prepared for the Department of Public Instruction to fulfill requirements set forth in PL93-380.

With the passage of PL 94-142, federal legislation for handicapped children, and Delaware's recently passed legislation, SB 353, which complies with federal law mandating "free appropriate education" for all handicapped children 4 through 20, more service options will be available to meet the needs of the handicapped child.

Two major provisions of SB 353 include the following: (1) it legally provides for autistic children, and (2) it also provides for financial aid, including full tuition funds and transportation costs for private placement of "complex or rare" handicapped persons. The new law no longer provides for partial tuition and transportation reimbursement (based on average per pupil expenditure) for private placement of learning disabled children. Learning disabled children who are considered to have rare and complex handicaps are eligible for full state tuition.

The major portion of the state law went into effect July 1, 1978. Essentially, Chapter 31 of Title 14 of the Delaware Code has been rewritten, retaining most of what was in the old chapter and adding new items. The most important requirement that went into effect at that time is that all handicapped children must now have available a free, appropriate public education.

Delaware is making a significant effort to provide a free, appropriate education for all handicapped children. Recent State legislation and new administrative procedures are indicative of this commitment. Over the last three years,

Delaware's growth in state aid for the handicapped has been 158%, 20 percentage points higher than the national average and higher than leadership states in special education programming such as New York and California. Delaware is also number one in state expenditures for special education as a percentage of state plus federal support.[1]

The stipulations of SB 353 and PL 94-142 necessitate administrative and organizational changes. Many have already been made. Many are currently being confronted.

Since 1971, Delaware has made great strides in serving more handicapped children. In 1971, the number of handicapped children who were eligible for but "deprived of special educational opportunities" was 2,050. According to census data as of March 1977, the number of children classified as "unserved" had dropped to 65 (see Table VII-1). Although 2,539 children were classified as "underserved" in 1977, at least most of these handicapped children were receiving some education and services, whereas in 1971 they presumably were not. Though some children may be unserved, the lack of services seems to be due primarily to the parental and child's resistence rather than inadequate programs (see Table VII-2).

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[1]See McBride, Robert H. "State Support for Special Education of the Handicapped in Delaware," State Board of Education Report, 1976, II, p. 1-2.

Table VII-1

| Age | Number of Children Unserved, March 1977 |
|---|---|
| 3-5 | 5 |
| 6-17 | 25 |
| 18-21 | 35 |
| Total | 65 |

Source: Delaware Department of Public Instruction

Table VII-2

Unserved Handicapped Children
Not Being Properly Educated and Trained, March 1977

| EXCEPTIONALITY | No Special Education Program Available at the Instruction Level | No appropriate Special Education Program Available at the Instructional Level | Appropriate Special Education Program Exists, but no Space Available for Present Placement | Unable to Attend Educational Program Because of Handicapping Condition | Student Excluded by District Administrative Action | Parent Resistance | Child Resistance | TOTAL |
|---|---|---|---|---|---|---|---|---|
| Mental Retardation | | | | 1 | 3 | 5 | 16 | 25 |
| Hard of Hearing | 1 | | | | | | | 1 |
| Deaf | | | | | | | | |
| Speech Impaired | | | | | | | | |
| Visually Handicapped | | | | | | | | |
| Socially Emotionally Maladjusted | | 1 | 1 | | 8 | 5 | 12 | 27 |
| Orthopedically Impaired | | | | 1 | | | | 1 |
| Health Impaired | | | | | | | | |
| Specific Learning Disability | 4 | | | | 2 | | 5 | 11 |
| TOTAL | 5 | 1 | 1 | 2 | 13 | 10 | 33 | 65 |

Source: Delaware Department of Public Instruction.

The Exceptional Children/Special Programs Division of the Department of Public Instruction, under the leadership of Dr. Carl Haltom, has also made a concerted effort to coordinate and consolidate various public and private educational services and special agencies for exceptional children in the state in order to identify and serve the specific needs of exceptional children with available services. An identification effort, Project Childfind, has used various forms of media (i.e., radio, TV, literature) to enhance identification of handicapped children, especially those children typically considered difficult to identify (e.g., learning disabled). DPI has established long-term and short-term goals for remedying inadequacies in educational services for handicapped children. A major goal is to have all agencies that presently provide any piecemeal services for exceptional children cooperate statewide to administer a continuum of services. An administrative agreement between DPI, the Departments of Health and Social Services and Correction, and a project proposal to implement the agreement describe the cooperative efforts of the three agencies in developing a full continuum of services.

The following current procedures are recommended for further reassessment:

1. Private placement funding for those students classified as rare and complex. Residential treatment centers located outside the State of Delaware range anywhere between $5,000 to $38,000 per year. A study of the advantages and disadvantages of out-of-state placements should be considered. A study of the advantages and disadvantages of establishing group homes within the State for those students classified as "complex or rare" is further recommended.

2. The relatively large differences in expenditures per student for severely and trainable mentally handicapped. Comparison among the three schools for the severely and trainable mentally handicapped indicates substantial differences in expenditures per student. In 1977, the expenditures at Meadowwood, Ennis, and Charlton were $5,449, $3,605, and $3,580 respectively.[2] Are students in each of these schools receiving the same quality of education? It is recommended that the state make an attempt to equalize expenditures for similar categories of the handicapped.

The Department of Public Instruction has made significant progress in the coordination of personnel effort, programs and services across districts within the state. According to a recent evaluation by the Bureau of Education for the Handicapped, Delaware is currently in substantial compliance with PL 94-142.

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[2]Department of Public Instruction, Report of Educational Statistics, 1976-1977.

# AN EVALUATION OF THE DELAWARE STATE PUBLIC ELEMENTARY AND SECONDARY EDUCATIONAL EQUALIZATION LAWS

Volume VIII

## Policy Recommendation for Financing Public Elementary and Secondary Education in Delaware

Prepared for the Department of Public Instruction to fulfill requirements set forth in PL93-380.

As a result of legal challenges to the system of financing public elementary and secondary education, school finance schemes in several states have been declared unconstitutional. As was discussed in detail in the legal section of this report, it was noted that the standards which have been successfully employed in overturning states' financial schemes can be classified into three basic types. These include input standards (e.g., expenditures per student) a la Serrano, output standards (e.g., test scores) in the tradition of Robinson v. Cahill, and finally, taxpayer equity (break the tie between tax rates and fiscal capacity), which was important in the Serrano case.

In the previous chapters we have presented four major findings: 1) expenditures per pupil (an input measure) and achievement scores (an output measure) are strongly and positively related to the property wealth per pupil of the district; 2) the assessment-to-sales ratios used in the current Division III formula do not correctly reflect wealth differences between districts (a problem of taxpayer equity); 3) Division I state expenditures are wealth reinforcing, i.e., per pupil Division I funding is greater on the average for districts with greater per pupil property wealth; and 4) there exists under current assessment practices substantial variation between assessed-to-market ratios both between and within districts (again, a problem of taxpayer equity). These variations exist both between and within property

types. With the New Castle County redistricting, the intradistrict variations are compounded. These findings may provide a basis for litigation, as outlined in our review and interpretation of recent court deliberations. In this chapter we explore alternative policy recommendations.

Our basic policy recommendation is two-fold: First, at a minimum, the state should establish a Tax Equalization Board to help promote taxpayer equity. The Board would leave current assessment procedures in tact, but would compute up-to-date sales ratios for the purpose of distributing Division III (equalization) funds. These sales-ratios would replace the ".7, .6, .5" ratios currently used by DPI. By itself, however, the recommendation of a Tax Board would do little to promote equalization on an input or output standard because of the currently low level of Division III funding. In addition, the Board is not capable of tackling the problem of intradistrict variations in assessment-sales-ratios.

The second part of our basic policy recommendation is to substantially increase the level of Division III funding, to be offset by a substantial decrease in the level of Division I funding. Of the Division I plus III pool, Division I's share is currently in the neighborhood of 95%. We recommend that Division I's share be decreased to roughly 60% over a period of five to six years. The first step in this direction would be to assign all Division I increments over the next five years into the Division III pool. Since we cannot predict how district

expenditures per pupil would react to such a funding reallocation, it would be necessary to carefully monitor the progress toward equalization from both an input and an output standard.

It is important to reiterate the basic thrust of our recommendation. Under the current distribution scheme for State funds for public education, the State provides, on the average, greater funds per pupil for districts with greater property wealth per pupil. Even though the Division III funds are negatively related to district wealth, the Division I funds are wealth reinforcing and swamp the equalizing tendencies of Division III. For example, the correlation between the Division I plus III pool per pupil and property wealth per pupil, using our unconstrained measure of property wealth is .26 for Fiscal Year 1977; the Division I correlation is .39, while the Division III correlation is -.74.[1] We propose that the State change its funding pattern so that at least the State funding per pupil as a whole is no longer wealth reinforcing. In fact, we recommend that per pupil State funding as a whole be negatively related to property wealth per student to offset the observed tendency of wealthier districts to provide more funding per pupil. Our recommendation of increasing Division III funds to 60% of the total of Division I plus Division III over a five-year period would lead to a correlation between per pupil property wealth and per pupil Division I plus III funding of approximately -.30. We recommend that the

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[1]Unconstrained property wealth is obtained by dividing the total assessments in the district by the assessment-sales ratios from Table V-1.

adjustment be made gradually so that DPI can closely monitor the impact of such reallocation on district expenditure patterns, to determine whether mid-course adjustments are necessary to help insure fiscal neutrality regarding expenditures per pupil across the State.

It is also important to reiterate the role of the Tax Equalization Board in the basic policy recommendation. By itself, the Board would do little to increase equalization funds to the poorer districts. However, as the size of equalizing funding increased under the second part of our recommendation, the Board would take on an added importance, namely, to insure that property wealth is being correctly measured and that taxpayers are being treated equitably.

1. The Division III Formula and Taxpayer Equity

In the Division III formula, DPI uses the arbitrarily determined assessed-to-market ratios of .7 for New Castle County districts, .6 for Kent County districts, and .5 for Sussex County districts. In our discussion of the property-tax (Volume V) we have indicated that these ratios are not reflective of relative market values. In a set of Tables below, we examine the differences that would occur in Division III funding if the sales-ratios we have presented above in Table V-1 were used. It should be emphasized that we leave the rest of the Division III formula in tact in the following calculations.

In Table VIII-1 we recalculate DPIs "full value of real estate per pupil" using our sales ratios from Table V-1 (Method II) rather than their ".7, .6, .5." In this table, all districts except Wilmington appear wealthier using our sales ratios, while districts in Kent and Sussex counties appear relatively richer than New Castle County. A word of caution is that the latest reassessments for Sussex County were not available when we computed our sales ratios.

In Table VIII-2 we use actual assessment-sales ratios to compute what the total level of Division III funding would have been per district in fiscal year 1977 if our sales ratios had been used in the DPI formula (Method II). These numbers are compared to the actual Division III funding for that year (Method I). The numbers in Method II are adjusted so that both columns sum to the same total. The dollar differences are small because of the small level of Division III funding. Table VIII-3, which compares the Division III entitlements per student under the alternative sales-ratio assumptions, produces similar results.

While the updated sales ratios may introduce greater taxpayer equity into the distribution of Division III funds, the redistribution is apparently not particularly favorable to the poorer districts in the State. This is demonstrated by the fact that the correlation of district property wealth per pupil is less negatively related to Division III calculated under Method II than for Method I. The correlations are -.50 and -.75 respectively. Thus, it is apparent that under the current DPI formula, the goals

of taxpayer equity and input equity (expenditures per pupil) cannot be achieved simultaneously merely by using updated sales ratios in the DPI formula. However, this result is one of historical accident and there is no guarantee that it will continue as the counties reassess properties periodically over time. The twin goals of taxpayer equity and input (expenditure) equalization can be achieved by increasing the level of Division III funding and using sales ratios reflective of actual wealth differences. The problem with increasing Division III funding without changing the sales ratios is that over time with periodic county reassessments, the State may experience great variation in the actual equalization impact of Division III funding on expenditures.

2. Tax Equalization Board versus State-Wide Reassessment

One of the most important results described earlier in this report (Volume V) concerns the substantial variations in assessment-sales ratios that exist both between and within school districts in Delaware. This along with the fact that no effort at the county or state level has been made to "equalize" the property tax puts the Delaware system of educational finance on a weak legal foundation. In fact, school finance schemes in states which rely on unequalized property taxes to distribute state monies for education (e.g., Division III) are extremely susceptible to legal challenge. Three basic courses of action are available to states such as Delaware which find themselves in this position. The State of Delaware could on the one hand,

take over the job of assessing. Secondly, a consortium of the counties could be formed with the purpose of improving state assessment procedures. A third possible solution would be to leave the current assessment procedures in place and form a tax equalization board which would have as its only charge, equalizing assessment-sales ratios between school districts. These policy options are now discussed in the order noted above.

The state could completely take over the job of administering the property tax. The most obvious advantages to such a plan are that it would 1) provide for uniform standards of assessment, 2) provide for uniform qualifications for assessment personnel, 3) end the practice of infrequent and uncoordinated reassessments which has been the pattern for the counties of Kent, Sussex and New Castle, 4) help eliminate the wide variations in assessment-sales ratios which exist within school districts for the same kinds of properties, and 5) greatly lessen the possibility of a taxpayer law suit against the counties.

Another advantage of such a policy for Delaware is that economies of scale would likely be forthcoming. Given the smallness of Delaware--many counties across the United States contain more parcels of property to assess than in the whole state--efficiencies undoubtedly would arise in areas such as personnel, data processing, supplies and expenses, assessment procedures and procedures for reassessment.

The basic problems with a complete state takeover are the relatively large start-up costs along with the political

implications of such a change. In particular, 1) it would require a statewide reassessment to start up this statewide plan, 2) county governments which currently under Delaware Law administer the property tax would probably view this as an infringement on their rights, and 3) in a state such as Delaware, that does not at present rely very heavily on the property tax to distribute state funds to local jurisdictions--education in this particular case--it may be more feasible to make a less drastic change in the system.

Another possibility, which is short of complete state takeover in the administration of the property tax, would involve the formation of a consortium of the counties for the purpose of enforcing uniform assessment procedures in Delaware. The State would have as its role in this scheme the job of encouraging the counties to improve these practices. If the counties cooperate, many of the goals listed above in the case of complete state takeover could be realized. The main disadvantage appears to be the possibility that inter-county cooperation might not be forthcoming.

A third alternative is the formation of a state tax equalization board to equalize assessments for the purpose of distributing state funds to local school districts. The board would take county assessment-sales ratios and adjust them (i.e., equalizing them across school districts) for purposes of determining the amount of state dollars which is to be distributed on an equalizing basis. It should be emphasized that the board

in carrying out this task would not change the assessment procedures which are currently employed in Kent, Sussex and New Castle Counties. It would conduct annual assessment-sales ratio surveys so that more accurate measures of market values of property could be obtained. This task is of utmost importance, because once accurate measures of market value are known, it really makes no difference whether property taxes are based on assessments of 100%, 75%, 50%, etc. of market values.

The tax board would be required to have documentation on all property transactions which have occurred in each county and school district. Forms would be issued to all purchasers of property. The forms would contain information on such things as the sales price, assessed value, county, school district, more specific location data, and property and/or building characteristics. The staff verifiers of the board would in typical transactions accept the information as it is received. However, some transactions which are not arms-length or for some other reason are outliers, would require further investigation. In these cases the board would have to send trained staff out to examine properties where the sales prices are questionable. The appraisers probably would be needed most in the appraisal of commercial and industrial types of property.

If the information forms are not returned, obtaining the required information would involve phoning purchasers of properties by board clerical staff. Field assessors would, as noted, only be required to aid in determining the market values of

properties which appear to be outliers.

The resulting assessment-sales ratios which are obtained could then be used to obtain more accurate measures of market values of properties. These market values would then be plugged into the formula for the distribution of Division III funds to local school districts.

The budget for the board would probably be in the range of $150,000-$200,000 per year. These figures are based on an estimated cost of $10 per transaction, where the number of transactions per year would be close to 15,000-20,000 in the State.[2]

The advantages of a tax equalization board in the determination of the State distribution of funds for equalizing purposes are threefold. It would neutralize the impact of large variations in assessment-sales ratios which currently exist between school districts. Second, it leaves in tact the current assessment procedures at the county level. Third, it would be a low cost method of "heading off" legal challenges to the Delaware school finance scheme which are likely to occur if no changes were made. The most serious weakness of the proposal lies in its inability to eliminate the within district variations that were demonstrated earlier in the report and which have recently been attacked in Pennsylvania courts, as well as elsewhere.

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[2]Figures on acceptable cost estimates for assessors were provided by David Reed, Division of Assessment, New Castle County.

As our policy recommendation, we propose that at a minimum a state tax equalization board be formed. Whether the minimum policy is sufficient depends on one's feeling about the probability of a taxpayer suit, especially in New Castle County as a result of the merging of school districts associated with desegregation. The tax equalization board is incapable of eliminating the huge intra district differences in assessment-sales ratios in New Castle County. A state takeover, however, by enforcing uniform assessment and reassessment procedures could eliminate existing intra district inequities. If taxpayer suits are viewed as being unlikely, then the state tax equalization board is capable of adjusting inter district differences so that a more equitable distribution of state funds can be obtained.

3. Alternative Division III Funding Levels

The current method of calculating a district's Division III entitlement does not accurately reflect property wealth differences between districts. At present, the inclusion of more representative sales ratios in the Division III formula, however, cannot lead to any substantial change in district expenditure patterns because of the low level of Division III funding. While the institution of a Tax Equalization Board may help to insure interdistrict (as opposed to intradistrict) taxpayer equity, that change alone will not have a substantial impact on the positive correlation between per pupil expenditures and property

wealth in the State. In order to move toward wealth neutrality vis-a-vis an input (expenditure) standard, we recommend that Division III be funded at a substantially higher level--at the expense of Division I funding. For example, Division I funding could be kept at its present level in terms of units for the next five years, while incremental State funding would be channeled into Division III.

The relative level of Division I expenditures, which are currently wealth reinforcing, would be reduced while the relative level of Division III expenditures, which are wealth neutralizing, would be increased. The overall goal would be to make sure that at least the State does not contribute to the unequalized expenditure pattern of the districts, i.e, to make sure that State funding overall per pupil is not wealth reinforcing. A more desirable result would yield a pattern of state funding somewhat negatively related to district wealth so that the wealth reinforcing expenditures pattern of the districts could be offset.

Tables VIII-4 and VIII-5 demonstrate the results of three policy scenarios which indicate the distribution of the Division I plus III pool for each district under alternative assumptions about the relative proportions of total Division I plus III funding. The figures presented in the Tables are calculated by taking the FY1977 Division I plus III funding and redistributing the total under alternative assumptions about relative Division I versus III funding levels. It is important to note that these

are crude estimates of changes in relative funding patterns under the assumption that the total level of State Division I plus III funding remains unchanged. At the bottom of each column in Table VIII-4 the correlation coefficient between the particular per pupil state funding pattern per district and the per pupil property wealth per district are shown.

The first column in Table VIII-4 contains the actual combined Division I plus III funding for fiscal year 1977 for each district. In the second column, the same total funding is allocated as 60 percent to Division I and 40 percent to Division III. In column 3, the total Division I plus III funds are distributed on a 50-50 basis, while in column 4, the total funding is distributed entirely according to the Division III formula. In columns 2, 3, and 4, sales ratios from Table V-1 are used to compute the Division III allocations.

The results of these three policy scenarios are summarized in Table VIII-5, wnich shows the dollars gains and losses that arise as a result of each of the three policies. The losses and gains are computed on the basis of the actual fiscal year 1977 Division I plus III funding per district. The columns in Table VIII-5 are labeled (2), (3), and (4) to correspond to columns 2, 3, and 4 in Table VIII-4.

We have recommended above that incremental State funding for public education over the next several years be distributed according to a revised Division III (equalization) formula.

This would lead to an approximate 60%-40% split in the future Division I plus III pool between Division I expenditures and Division III expenditures. Tables VIII-4 and VIII-5 provide insights into relative changes in funding levels that might occur from such a policy (and from potential variations leading, for example, to 50-50 or 0-100 percent splits). The figures in the two tables are not indicative of dollar amounts in the future, but rather show how the current (FY77) budget would have been allocated if the splits were in force today. Under a 60-40 split, for example, funds are redistributed from districts like Alexis I. duPont, Mount Pleasant, Capital, Indian River, and Cape Henlopen to districts like De La Warr, New Castle-Gunning Bedford, Caesar Rodney, Lake Forest, Conrad, and Newark. In general, as indicated by the correlation coefficients at the bottom of Table VIII-4, the net gainers under the proposed redistributions tend to be the poorer districts in the State based on their property wealth per pupil.

4. Reorganization of Division I Funding

The results of one additional policy experiment are presented in Table VIII-6. One method to negate the wealth reinforcing nature of Division I funding is to change the distribution rules so that each district would receive a flat amount per unit. Under this scheme the funding would not be related to the experience and/or the education level of the personnel involved. Table VIII-6 presents for fiscal year 1977 for each district the Division I

units, the actual Division I funding, and the level of Division I funding were it distributed on a flat basis of $15173 per unit (see note to Table VIII-6). The totals under Method I and Method II are the same. The figure of $15,173 is an average based on units for all types of personnel.

When the Division I funds are distributed on a flat basis as in Method II, their interdistrict pattern is no longer wealth reinforcing, since the correlation between per pupil Division I expenditure and per pupil property wealth drops to zero. Adding current Division III funding to the flat-rate Division I funds (Method II), the Division I plus III pool per pupil becomes negatively related to property wealth per pupil per district. The correlation coefficient between per pupil property wealth per district and the revised Division I plus III funding per pupil is approximately -.14 for the experiment based on fiscal year 1977 data. If the State were unwilling to increase the Division III expenditure level, then a modest amount of wealth neutralizing effects in the State's Division I plus III pool could be achieved by reorganizing the distribution of Division I funding. Again, DPI would have to carefully monitor the effects of such a policy recommendation on the actual per pupil, district expenditure pattern. We recognize this particular policy option as one of high social cost in terms of established pay schedules and would recommend its adoption only over a period of time and with careful deliberation as to the mechanics of the change.

5. Special Education

As was mentioned in the legal section of our report a "needs" criterion has been used in certain cases involving legal attacks on state school finance schemes. This means that states must provide for the education of children with special needs.

The following current procedures are recommended for further reassessment:

1. Private placement funding for those students classified as rare and complex. Residential treatment centers located outside the State of Delaware range anywhere between $5,000 to $38,000 per year. A study of the advantages and disadvantages of out-of-state placements should be considered. A study of the advantages and disadvantages of establishing group homes within the State for those students classified as "complex or rare" is further recommended.

2. The relatively large differences in expenditures per student for severely and trainable mentally handicapped. Comparison among the three schools for the severely and trainable mentally handicapped indicates substantial differences in expenditures per student. In 1977, the expenditures at Meadowwood, Ennis, and Charlton were $5,449, $3,605, and $3,580 respectively.[3] Are students in each of these schools receiving the same quality of education? It is recommended that the state make an attempt to equalize expenditures for similar categories of the handicapped.

The Department of Public Instruction has made significant progress in the coordination of personnel effort, programs and services across districts within the state. According to a recent evaluation by the Bureau of Education for the Handicapped, Delaware is currently in substantial compliance with PL 94-142.

[3]Department of Public Instruction, Report of Educational Statistics, 1976-1977.

Table VIII-1: Wealth (Full Value)/Enrollment FY 1977

| | Method I[1] | Method II[2] | Difference | % Increase |
|---|---|---|---|---|
| New Castle County | | | | |
| Claymont | 32892 | 34082 | 1190 | 3.6% |
| Alexis I. duPont | 62834 | 64386 | 1552 | 2.5% |
| Alfred I. duPont | 39054 | 42272 | 3218 | 8.2% |
| Marshallton-McKean | 34264 | 35880 | 1616 | 4.7% |
| Appoquinimink | 24865 | 26846 | 1981 | 8.0% |
| De La Warr | 24716 | 25803 | 1087 | 4.4% |
| Mount Pleasant | 45931 | 48206 | 2275 | 5.0% |
| Newark | 27531 | 30178 | 2647 | 9.6% |
| New Castle-Gunning Bedford | 29947 | 32692 | 2745 | 9.2% |
| Stanton | 31655 | 34309 | 2654 | 8.4% |
| Wilmington | 37290 | 37290 | 0 | 0 |
| Conrad | 31860 | 32491 | 631 | 2.0% |
| County Average | 35237 | 37036 | 1799 | 5.1% |
| Kent County | | | | |
| Smyrna | 25137 | 41058 | 15921 | 63.3% |
| Capital | 35752 | 49887 | 14135 | 39.5% |
| Caesar Rodney | 18299 | 31370 | 13071 | 71.4% |
| Lake Forest | 19373 | 24732 | 5359 | 27.7% |
| Milford | 23754 | 41786 | 18032 | 75.9% |
| County Average | 25238 | 38642 | 13404 | 53.1% |
| Sussex County | | | | |
| Indian River | 44881 | 64115 | 19234 | 42.9% |
| Laurel | 20310 | 35017 | 14707 | 72.4% |

Table VIII-1: Wealth (Full Value)/Enrollment FY 1977
Continued

| | Method I[1] | Method II[2] | Difference | % Increase |
|---|---|---|---|---|
| Seaford | 27757 | 46262 | 18505 | 66.7% |
| Woodbridge | 21846 | 32954 | 11108 | 50.8% |
| Cape Henlopen | 58683 | 66685 | 8002 | 13.6% |
| Delmar | 24751 | 28126 | 3375 | 13.6% |
| County Average | 38044 | 52926 | 14882 | 39.1% |

[1]Uses the method employed by DPI to calculate wealth per student in the district for purposes of Division III funding--numbers as reported in Table 53 of DPI's Report of Educational Statistics for FY 1977.

[2]Uses same formula except uses sales ratios from Table V-1.

Table VIII-2: Division III Total Entitlement FY77
Comparing Method I and Method II Adjusted to Total Method I

| | Method I[1] | Method II[2] | Difference | % Change |
|---|---|---|---|---|
| New Castle County | | | | |
| Claymont | 121,635 | 136,934 | 15,299 | 13% |
| Alexis I. duPont | 23,700 | 40,944 | 17,244 | 73% |
| Alfred I. duPont | 301,215 | 339,832 | 38,617 | 13% |
| Marshallton-McKean | 134,250 | 151,491 | 17,241 | 13% |
| Appoquinimink | 124,740 | 131,474 | 6,734 | 5% |
| De La Warr | 181,832 | 194,255 | 15,423 | 8% |
| Mount Pleasant | 104,160 | 133,294 | 29,134 | 28% |
| Newark | 727,528 | 777,473 | 49,945 | 7% |
| New Castle-Gunning Bedford | 353,761 | 379,410 | 25,649 | 7% |
| Stanton | 209,969 | 227,009 | 17,040 | 8% |
| Wilmington | 414,000 | 512,705 | 98,705 | 24% |
| Conrad | 214,650 | 242,477 | 27,827 | 13% |
| County Average | 242,620 | 272,275 | 29,655 | 12% |
| Kent County | | | | |
| Smyrna | 142,720 | 105,543 | -37,177 | -26% |
| Capital | 198,860 | 154,221 | -44,639 | -22% |
| Caesar Rodney | 330,150 | 269,318 | -60,832 | -18% |
| Lake Forest | 184,230 | 176,967 | - 7,263 | - 4% |
| Milford | 182,385 | 131,929 | -50,456 | -28% |
| County Average | 207,669 | 167,596 | -40,073 | -19% |
| Sussex County | | | | |
| Indian River | 159, 536 | 92,805 | -66,731 | -42% |
| Laurel | 111,180 | 87,346 | -23,834 | -21% |

Table VIII-2: Division III Total Entitlement FY77
Comparing Method I and Method II Adjusted to Total Method I
Continued

| | Method I[1] | Method II[2] | Difference | % Change |
|---|---|---|---|---|
| Seaford | 161,070 | 116,462 | -44,608 | -28% |
| Woodbridge | 94,050 | 80,977 | -13,073 | -14% |
| Cape Henlopen | 34,320 | 25,931 | - 8,389 | -24% |
| Delmar | 39,345 | 40,034 | 689 | 2% |
| County Average | 99,917 | 73,926 | -25,991 | -26% |

[1]Uses the method employed by DPI to calculate Division III funds per district.

[2]Uses DPI's Division III formula, except actual sales ratios from Table V-1 replace DPI's .7, .6, .5.

Table VIII-3: Division III Entitlement/Enrollment

| | Method I[1] | Method II[2] | Difference | % Change |
|---|---|---|---|---|
| New Castle County | | | | |
| Claymont | 40 | 45 | 5 | 12.5% |
| Alexis I. duPont | 8 | 13 | 5 | 62.5% |
| Alfred I. duPont | 33 | 37 | 4 | 15.2% |
| Marshallton-McKean | 40 | 45 | 5 | 12.5% |
| Appoquinimink | 53 | 57 | 4 | 7.5% |
| De La Warr | 61 | 66 | 5 | 8.2% |
| Mount Pleasant | 24 | 30 | 6 | 25.0% |
| Newark | 43 | 46 | 3 | 7.0% |
| New Castle-Gunning Bedford | 41 | 44 | 3 | 7.3% |
| Stanton | 44 | 48 | 4 | 9.1% |
| Wilmington | 31 | 39 | 8 | 25.8% |
| Conrad | 44 | 51 | 7 | 15.9% |
| Kent County | | | | |
| Smyrna | 45 | 34 | -11 | -24.4% |
| Capital | 31 | 24 | - 7 | -22.6% |
| Caesar Rodney | 56 | 46 | -10 | -17.9% |
| Lake Forest | 51 | 50 | - 1 | - 2.0% |
| Milford | 47 | 34 | -13 | -27.7% |
| Sussex County | | | | |
| Indian River | 24 | 14 | -10 | -41.7% |
| Laurel | 50 | 40 | -10 | -20.0% |
| Seaford | 44 | 32 | -12 | -27.3% |

Table VIII-3: Division III Entitlement/Enrollment
Continued

| | Method I[1] | Method II[2] | Difference | % Change |
|---|---|---|---|---|
| Woodbridge | 47 | 41 | - 6 | -12.8 |
| Cape Henlopen | 9 | 7 | - 2 | -22.2 |
| Delmar | 50 | 52 | - 2 | - 4.0 |

[1]Uses the method employed by DPI to calculate Division III funds per district.

[2]Uses DPI's Division III formula, except actual sales ratios from Table V-1 replace DPI's .7, .6, .5.

TABLE VIII-4: Comparison of Various Allocations of Div I & Div III FY77

| | (1) Current Method[a] (DivI+DivIII) Actual | (2) 60-40 Method[b] (60%DivI+40% DivIII) | (3) 50-50 Method[c] (1/2DivI+1/2 DivIII) | (4) 0-100 Method[d] (DivI+DivIII) Distributed by Div III |
|---|---|---|---|---|
| New Castle County | | | | |
| Claymont | 2,539,115 | 2,684,102 | 2,720,856 | 2,904,626 |
| Alexis I. duPont | 2,602,264 | 1,971,210 | 1,787,537 | 869,169 |
| Alfred I. duPont | 7,875,675 | 7,652,932 | 7,578,942 | 7,208,991 |
| Marshallton-McKean | 2,911,997 | 3,034,856 | 3,064,762 | 3,214,286 |
| Appoquinimink | 2,048,435 | 2,325,824 | 2,402,515 | 2,785,971 |
| De La Warr | 3,030,808 | 3,441,369 | 3,554,333 | 4,119,148 |
| Mount Pleasant | 3,686,880 | 3,385,226 | 3,291,459 | 2,822,629 |
| Newark | 13,270,782 | 14,492,068 | 14,824,108 | 16,484,307 |
| New Castle-Gunning Bedford | 6,658,159 | 7,188,925 | 7,331,986 | 8,047,290 |
| Stanton | 4,327,107 | 4,518,328 | 4,567,720 | 4,814,676 |
| Wilmington | 11,463,305 | 11,304,986 | 11,232,153 | 10,867,989 |
| Conrad | 4,160,608 | 4,541,867 | 4,642,000 | 5,142,664 |
| Kent County | | | | |
| Smyrna | 2,434,516 | 2,339,329 | 2,322,929 | 2,240,932 |
| Capital | 4,924,602 | 4,282,177 | 4,112,877 | 3,266,378 |

TABLE VIII-4: Comparison of Various Allocations of Div I & Div III FY77
Continued

| | (1) Current Method[a] (DivI+DivIII) Actual | (2) 60-40 Method[b] (60%DivI+40% DivIII) | (3) 50-50 Method[c] (1/2DivI+1/2 DivIII) | (4) 0-100 Method[d] (DivI+DivIII) Distributed by Div III |
|---|---|---|---|---|
| Caesar Rodney | 4,666,193 | 5,014,169 | 5,130,123 | 5,709,891 |
| Lake Forest | 2,696,400 | 3,084,440 | 3,196,440 | 3,756,431 |
| Milford | 2,954,551 | 2.864,303 | 2,853,016 | 2,796,583 |
| Sussex County | | | | |
| Indian River | 4,834,903 | 3,730,192 | 3,436,160 | 1,966,001 |
| Laurel | 1,733,087 | 1,763,227 | 1,778,372 | 1,854,099 |
| Seaford | 2,863,445 | 2,687,961 | 2,650,917 | 2,465,701 |
| Woodbridge | 1,427,123 | 1,527,268 | 1,559,392 | 1,720,009 |
| Cape Henlopen | 2,702,074 | 1,901,560 | 1,677,081 | 554,686 |
| Delmar | 655,128 | 729,292 | 750,029 | 853,734 |
| Correlation Coef. | .26 | -.30 | -.36 | -.49 |

[a]Total of Div I & Div III as they were appropriated in FY77.

[b]Total Div I & Div III split 60% to Div I then allocated according to percentages of total Div I that were appropriated in FY77. Then 40% of total Div I & Div III is allocated according to percentages of total Div III using Method II (our wealth measure is used in this formula with the only difference between our wealth and the wealth currently used is in the Assessed to Market ratios used; ours are based on an actual market survey).





[c]Total Div I & Div III split 50% to Div I and allocated by actual percentages of total Div I that each district received in FY77 and 50% to Div III allocated among districts using percentages based on Method II allocation of Div III.

[d]Total Div I & Div III allocated over the districts using the Division III percentages based on Method [redacted] (our wealth).

TABLE VIII-5: Differences and Percentage Changes Between Various Allocations of Div I & Div III

| | (2) Difference Between Current Method & 60-40 | % Δ | (3) Difference Between Current Method & 50-50 | % Δ | (4) Difference Between Current Method & 0-100 | % Δ |
|---|---|---|---|---|---|---|
| New Castle County | | | | | | |
| Claymont | + 144,987 | + 5.7 | + 181,741 | + 7.2 | + 365,511 | +14.4 |
| Alexis I. duPont | - 631,054 | -24.3 | - 814,727 | -31.3 | -1,733,095 | -66.6 |
| Alfred I. duPont | - 222,743 | - 2.8 | - 296,703 | - 3.8 | - 666,684 | - 8.5 |
| Marshallton-McKean | + 122,859 | + 4.2 | + 152,765 | + 5.2 | + 302,289 | +10.4 |
| Appoquinimink | + 277,389 | +13.5 | + 354,080 | +17.3 | + 737,536 | +36.0 |
| De La Warr | + 410,561 | +13.5 | + 523,525 | +17.3 | +1,088,340 | +35.9 |
| Mount Pleasant | - 301,654 | - 8.2 | - 395,421 | -10.7 | - 864,251 | -23.4 |
| Newark | +1,221,286 | + 9.2 | +1,553,326 | +11.7 | +3,213,525 | +24.2 |
| New Castle-Gunning Bedford | + 530,736 | + 8.0 | + 673,827 | +10.1 | +1,389,131 | +20.9 |
| Stanton | + 191,221 | + 4.4 | + 240,613 | + 5.6 | + 487,569 | +11.3 |
| Wilmington | - 158,319 | - 1.4 | - 231,152 | - 2.0 | - 595,316 | - 5.2 |
| Conrad | + 381,259 | - 9.2 | + 481,392 | +11.6 | + 982,056 | +23.6 |
| Kent County | | | | | | |
| Smyrna | - 95,187 | - 3.9 | - 111,587 | - 4.6 | - 193,584 | - 8.0 |
| Capital | - 642,725 | -13.0 | - 811,725 | -16.5 | -1,658,224 | -33.7 |

TABLE VIII-5: Differences and Percentage Changes Between Various Allocations of Div I & Div III
Continued

| | (2) Difference Between Current Method & 60-40 | % Δ | (3) Difference Between Current Method & 50-50 | % Δ | (4) Difference Between Current Method & 0-100 | % Δ |
|---|---|---|---|---|---|---|
| Caesar Rodney | + 347,976 | + 7.5 | + 463,930 | + 9.9 | +1,043,698 | +22.4 |
| Lake Forest | + 388,040 | +14.4 | + 500,040 | +18.5 | +1,060,031 | +39.3 |
| Milford | - 90,248 | - 3.1 | + 101,535 | - 3.4 | - 157,968 | - 5.3 |
| Sussex County | | | | | | |
| Indian River | -1,104,711 | -22.8 | -1,398,743 | -28.9 | -2,868,902 | -59.3 |
| Laurel | + 30,140 | + 1.7 | + 45,285 | + 2.6 | + 121,012 | + 7.0 |
| Seaford | - 175,484 | - 6.1 | - 212,528 | - 7.4 | - 397,744 | -13.9 |
| Woodbridge | + 100,145 | + 7.0 | + 132,269 | + 9.3 | + 292,886 | +20.5 |
| Cape Henlopen | - 800,514 | -29.6 | -1,024,993 | -37.9 | -2,147,388 | -79.5 |
| Delmar | + 74,164 | +11.3 | + 94,901 | +14.5 | + 198,606 | +30.3 |

TABLE VIII-6: A Comparison of Division I Entitlements, FY77

| | DIV I units | Method I[1] | Method II[2] $15173/unit | Difference | % Difference |
|---|---|---|---|---|---|
| New Castle County | | | | | |
| Claymont | 159 | 2,417,480 | 2,412,507 | - 4,973 | - .2 |
| Alexis I. duPont | 158 | 2,578,564 | 2,397,334 | -181,230 | -7.0 |
| Alfred I. duPont | 467 | 7,574,460 | 7,085,791 | -488,669 | -6.5 |
| Marshallton-McKean | 179 | 2,777,747 | 2,715,967 | - 61,780 | -2.2 |
| Appoquinimink | 132 | 1,923,695 | 2,002,836 | + 79,141 | +4.1 |
| De La Warr | 191 | 2,848,976 | 2,898,043 | + 49,067 | +1.7 |
| Mount Pleasant | 224 | 3,582,720 | 3,398,752 | -183,968 | -5.1 |
| Newark | 809 | 12,543,254 | 12,274,957 | -268,297 | -2.1 |
| New Castle-Gunning Bedford | 433 | 6,304,398 | 6,569,909 | +265,511 | +4.2 |
| Stanton | 257 | 4,117,138 | 3,899,461 | -217,677 | -5.3 |
| Wilmington | 690 | 11,049,305 | 10,469,370 | -579,935 | -5.2 |
| Conrad | 270 | 3,945,958 | 4,096,710 | +150,752 | +3.8 |
| Kent County | | | | | |
| Smyrna | 160 | 2,291,796 | 2,427,680 | +135,884 | +5.9 |
| Capital | 305 | 4,725,742 | 4,627,765 | - 97,977 | -2.1 |
| Caesar Rodney | 310 | 4,336,043 | 4,703,630 | +367,587 | +8.5 |
| Lake Forest | 178 | 2,512,170 | 2,700,794 | +188,624 | +7.5 |
| Milford | 193 | 2,772,166 | 2,928,389 | +156,223 | +5.6 |
| Sussex County | | | | | |
| Indian River | 338 | 4,675,367 | 5,128,474 | +453,107 | +9.7 |
| Laurel | 109 | 1,621,907 | 1,653,857 | + 34,950 | +2.1 |

TABLE VIII-6: A Comparison of Division I Entitlements, FY77
Continued

| | DIV I units | Method I[1] | Method II[2] $15173/unit | Difference | % Difference |
|---|---|---|---|---|---|
| Seaford | 182 | 2,702,375 | 2,761,486 | + 59,111 | +2.2 |
| Woodbridge | 95 | 1,333,073 | 1,441,435 | +108,362 | +8.1 |
| Cape Henlopen | 176 | 2,667,754 | 2,670,448 | + 2,694 | + .1 |
| Delmar | 43 | 615,783 | 652,439 | + 36,656 | +6.0 |

[1]Uses actual Division I entitlements for fiscal year 1977 as reported in Table 32 of DPI's Report on Educational Statistics for fiscal year 1977.

[2]Distributes Division I funds on a flat basis of $15173 per unit. The flat amount is calculated as

$$\frac{91,917,871}{6058} = 15173.$$